REPORT OF THE
VIRGINIA DEPARTMENT OF
EDUCATION

on Virginia's School Vision Screening Program and Early Detection of Learning Disabilities

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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DEPARTMENT OF EDUCATION REPORT ON HOUSE JOINT RESOLUTION NO. 127

Executive Summary

Background

The 1984 Virginia General Assembly passed House Joint Resolution 127, "Requesting the Department of Education to study and evaluate Virginia's school vision program as well as methods available for effective early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia."

Pursuant to this resolution, a study was undertaken by the Virginia Department of Education. Dr. Don L. Walker of the Special Education Department, University of Virginia was employed as the project consultant. Included in the study is a review of the literature in each of the areas of concern in the resolution, a survey of current practices in the schools of the Commonwealth, and interviews with several professionals in the areas of vision and special education regarding what is considered to be "best practice" in vision screening and early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia.

An Advisory Committee, consisting of persons representing Institutions of Higher Education, local Virginia school divisions, the National Society to Prevent Blindness, school nurses, the State Special Education Advisory Committee, the Virginia Association for Children and Adults with Learning Disabilities, the Virginia Council of Administrators of Special Education, the Virginia Department of Correctional Education, the Virginia Department for the Visually Handicapped, the Virginia Education Association, the Virginia Medical Society, the Virginia Optometric Association, the Virginia Orton Dyslexia Society, the Virginia Psychological Association, the Virginia Society of Ophthalmology, and the Virginia State Reading Association was organized. The Committee convened twice.

- Conclusions

-- Vision Screening:

Except for distance visual acuity screening, there is little consistency in vision screening practices in Virginia's public schools. Because of this inconsistency, evaluation of "Virginia's school vision-screening program" is not possible, except to state that there is no consistent and coordinated state program for vision screening as such.

-- Early Detection of Learning Disabilities:

The area of learning disabilities concerns a wide range of characteristics, rather than a single, easily identifiable condition. This is a heterogeneous group of youngsters often possessing only a few characteristics in common. Also, there is wide disagreement regarding the definition of the condition itself. There are at least three major national entities espousing and promoting their own definition or interpretation of the federal definition. The terms dyslexia and dysgraphia, represent just two of the many specific conditions included on the long list of conditions which are considered to be a part of learning disabilities, are presently in use by only some of the professionals engaged in the study and treatment of learning disabilities.

Because learning disabilities are defined by the federal and Virginia state regulations in terms of a deviation from the performance level expected on school-related tasks, positive identification before a child enters school is technically impossible.

The rather general category, "High Risk" [for academic failure], does seem to have some value as a means of designating those pre-school children who are likely to encounter academic or behavioral difficulties in the primary grades.

A number of indicators, many of which are present at or before birth, appear to be useful for identification of these High Risk youngsters. Some of these youngsters may prove in time to be learning disabled.

-- Vision-Related Problems of Learning Disabled Children:

Review of the literature, interviews with professionals, and consultation with the HJR 127 Advisory Committee have failed to indicate answers to the questions surrounding identification of vision-related problems of learning disabilities. There are several studies which have demonstrated efficacy of orthoptic exercises in the treatment of eye movement problems, but none of these found the treatment to have any beneficial effect on reading or other academic performance.

- Recommendations

-- Vision Screening:

1. That state guidelines, including a standard set of procedures for the administration of the program, be developed to clarify Virginia regulations concerning vision screening in the public schools.

2. That a program be developed and implemented for the recruitment and training of personnel to screen and refer.

3. That the Department of Education collect data on specific assessment standards used in the vision screening program.

-- Early Detection of Learning Disabilities:

Because of the mixed findings of the literature regarding identification of learning disabilities, and the current lack of agreement on a clear-cut definition of the condition, it seems inappropriate to recommend one specific screening procedure for the early identification of learning disabilities. It

is strongly recommended that attention be given to early identification of pre-school children who are at high risk for academic failure; some of these youngsters may prove, in time, to be learning disabled.

-- Vision-Related Problems of Learning Disabilities:

The research findings related to vision-related problems of learning disabilities are so varied and so equivocal that no definitive recommendations can be made at this time.

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ACKNOWLEDGEMENTS

As with any project involving the schools of the Commonwealth, the successful completion of this report has depended on the deep and long term concern of a great many interested and dedicated people. We wish to acknowledge the numerous persons without whose commitment and efforts this report could never have been completed.

First of all, Del. Jay W. DeBoer, the sponsor of HJR 127, gave the initial impetus to the project by providing his extensive store of printed background material, which helped immensely in the clarification of the issues and provided the first suggestion of a course of action.

Great appreciation is due the members of the HJR 127 Advisory Committee who spent many hours reviewing reports, traveling to Richmond for meetings, discussing various issues related to the project, providing lists of additional resources, and suggesting courses of action. The Advisory Committee membership list is in Appendix B.

Ms. Jane Koontz, of the Data Processing division of the Virginia Department of Education, did the first computerized data searches. This provided the means for the first phase of the review of the literature. Her service was prompt, careful, and efficient, and is gratefully acknowledged.

Thanks are given to Ms. Marion Fegley and Ms. Kate Meilink, graduate students in the Special Education Department of the University of Virginia, whose library work in the early stages of the literature search helped to trim the vast and sometimes confusing array of material to something which was more manageable.

As work progressed on the survey of current practices in screening for visual impairments and learning disabilities in the public schools, help was

sought in refining the survey instruments to be used. We are grateful for the advice of Dr. Joseph P. Roberts of the Research Division of the Virginia Department of Education, Dr. Robert Covert of the Research and Evaluation Department of the Curry School of Education of The University of Virginia, and members of the Instrument Review Committee, Ms. Susan Lopez, Mr. Ed Kingston, Ms. Pauline Pagliocca, and Ms. Gayle Schulman. Their suggestions and encouragement contributed much to the refinement of the survey instruments.

We wish to express our thanks to Dr. Marianne Kosiewicz and Ms. Ruth Robertson of the Albemarle County Public Schools, Dr. Dallas Crowe and Ms. Charlene Straley of the Charlottesville City Schools, and Dr. Rodney Kibler of the Greene County Public Schools, for assisting with the field testing of the survey instruments.

Another phase of the investigation consisted of interviews with a representative group of professionals who are concerned with the provision of services to visually impaired and/or learning disabled children. Gratitude is expressed to this group of patient individuals who gave large blocks of time from their busy schedules to answer questions regarding what they thought would constitute "best practices" in assessment for identification of children with visual impairment, learning disabilities, or visual-related learning disabilities. The names of these persons may be found in Appendix D.

Finally, immeasurable gratitude is due Dr. Don L. Walker of the Special Education Department of the University of Virginia, whose industry and commitment as Consultant to the project set a high level of expected performance for all those involved.

INTRODUCTION

House Joint Resolution 127

The 1984 Virginia General Assembly passed House Joint Resolution 127, "Requesting the Department of Education to study and evaluate Virginia's school vision program as well as methods available for effective early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia" (see Appendix A).

Pursuant to this resolution, a study was undertaken by the Virginia Department of Education. Dr. Don L. Walker of the Special Education Department, University of Virginia was employed as the project consultant. Included in the study has been a review of the literature in each of the areas of concern in the resolution, a survey of the current practices in the schools of the Commonwealth, and interviews with several professionals in the areas of vision and special education regarding what is considered to be "best practice" in vision screening and early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia.

An Advisory Committee consisting of persons representing the following affiliations was formed:

Institutions of Higher Education
Local Virginia School Divisions
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School Nurses
State Special Education Advisory Committee
Virginia Association for Children and Adults with Learning Disabilities
Virginia Council of Administrators of Special Education
Virginia Department of Correctional Education
Virginia Department for the Visually Handicapped
Virginia Education Association
Virginia Medical Society
Virginia Optometric Association
Virginia Orton Dyslexia Society
Virginia Psychological Association
Virginia Society of Ophthalmology
Virginia State Reading Association

This committee met twice during the time the project was in progress for the purpose of monitoring project activities and providing advice to the State Department of Education representatives and the project consultant regarding sources of materials and information. A list of the names and affiliations of the members of the Advisory Committee may be found in Appendix B.

Screening

The Code of Virginia mandates that the sight and hearing of all pupils in the public schools be tested (22.1-273), and that it is the responsibility of each building principal to see that it is done. State Regulations Governing Special Education Programs for Handicapped Children and Youth in Virginia (Board of Education, 1984) require that "Each local school division shall establish and maintain screening procedures to assure the identification of handicapped persons requiring special education residing within its jurisdiction" (p.15). Furthermore, "All children, within 60 administrative working days of initial enrollment in a public school, shall be screened in the following areas to determine if formal assessment is indicated:

1. Speech, voice, and language;
2. Fine and gross motor functions;
3. Vision and hearing" (p.16, ref. 22.1-273, Code of Virginia).

The practice of screening for the likelihood of certain problems is well established in the health field, and is particularly useful in the field of public health, where cost-effectiveness is always a premier consideration. Screening programs help to get needed services to "children who are not receiving them. Screening programs accomplish this goal by identifying children with health problems or needs that have not been recognized or have not been fully cared for; and by ensuring that these problems are adequately diagnosed and treated" (Frankenburg & North, 1974).

In a general sense, screening has the same meaning, whether the suspected condition is scoliosis or dyslexia, hypertension or hyperopia, anemia or astigmatism. One way of defining screening is that it is the use of quick, simple procedures that identify and separate persons who have a specific problem, or who are at risk of having such a problem, from those who probably do not have the problem. This can serve as a good definition of educational screening. Similarly, we could substitute "a vision problem," "a hearing problem," or "a learning disability," without invalidating the definition.

The New York State Education Department and the New York State Optometric Association (1982) have suggested criteria which a valid, reliable screening program should maintain. These particular criteria were proposed in connection with the New York State Vision Screening Study, but, given minor modifications, they, too, could be applied to nearly any area of concern. As modified, they are:

1. Clear definition of areas and skills being screened
2. Cost effectiveness in time and money
3. Clear-cut referral criteria
4. Efficient and equitable administration of tests by persons with at least a minimum of training
5. Establishment of periodical retesting

To these we might add:

6. Acceptable reliability of the screening procedures used
7. Effective follow-up procedures after referral.

Criterion #6 means that the procedure should identify likely members of the population in question with predictable consistency, and without falsely identifying persons who are not members of the population--a problem with many existing screening procedures. In fact, without having met criterion #6, it

is not likely that the procedure will meet any of the others. And, without criterion #7, the screening process becomes a meaningless exercise.

I. VISION SCREENING

Techniques and Materials

A wide variety of techniques and materials have been developed over the years for use in screening for vision problems. Probably the oldest, most familiar, and most commonly used formal method is the Snellen chart for checking distance visual acuity.

The Snellen chart is used at a prescribed distance (usually 20 feet) and has lines of letters of different sizes. The chart is designed so that each line of letters, observed by the normal eye at its prescribed distance, will produce the same sized images on the retina. Thus, the retinal image produced by a letter from the 20/200 line, viewed at 200 feet, will be the same size as that produced by a letter from the 20/20 line, viewed at 20 feet. When the distance is held constant, as one moves up line-by-line on the chart, letters from each higher line produce successively larger images on the retina. Therefore, identifying the smallest letters read correctly at a given distance will give an index or a measure of visual acuity, which is one indicator of the state of a person's sight, and the one most frequently tested in vision screening.

In addition to the Snellen chart, other commonly used materials and equipment which are in more or less frequent use include a set of cards consisting of simple figures representing a house, an umbrella, and an apple, in different sizes. This is published by Lighthouse, a service agency in New York City, for testing visual acuity of young children. Also slides are available for testing visual acuity with the Titmus Vision Tester and the Keystone Telebinocular.

The Efron Visual Acuity Test (Efron, 1982) provides materials for both near and distance testing of pre-school children, persons who cannot read

English, or anyone not able to respond in conventional ways. It employs three simple outline shapes to be presented via charts or cards.

Other important indicators or aspects of vision functioning are the following:

° Muscle balance - The degree to which the eyes are aligned or misaligned.

° Hyperopia (far-sightedness) - A far-sighted person may be able to read the visual acuity chart very well at a distance, but would be unable to focus clearly on objects up close, such as print in a book.

° Color discrimination - The ability of a person to distinguish colors throughout the spectrum. Any absence or reduction in this ability is commonly referred to as "color blindness."

° Fusion ability - The ability to fuse into a single image the two images transmitted from the eyes to the brain.

° Accommodation - The ability of the eye to focus, at different distances from the objective, from "near point" (approximately 12-14 inches) to "far point" (20 feet or more).

° Stereopsis - Commonly referred to as "two-eyed depth perception."

° Phoria - The tendency toward vertical or horizontal drift of the eyes, which may occur as the muscles of the eyes become tired from the effort of keeping "on target."

° Visual-motor intergration - The ability to combine the many aspects of vision and performance into one action or set of actions. Writing, for example, combines gross and fine motor activity with visual monitoring and direction.

° Visual field - A measure of the degree to which an individual can see objects which are located in the periphery of vision.

Comprehensive Vision Screening Procedures

Over the years, agencies have developed screening batteries which are used to identify a variety of problems in visual functioning in addition to visual acuity. Some of these batteries have been adopted by local school divisions or by state departments of education in order to standardize procedures for vision screening. Several batteries which are representative of this group are reviewed below, to give an overview of the types of procedures they encompass.

° Massachusetts Vision Test - The Massachusetts Vision Test (1938) was developed by the Massachusetts Department of Public Health. It consists of tests for visual acuity, muscle balance and far-sightedness or hyperopia. This test is no longer available as titled, but the three basic subtests have been incorporated into other batteries and into the procedures used with several testing instruments, such as the Keystone Telebinocular.

° The Home Eye Test for Preschoolers - The Home Eye Test for Preschoolers (National Society to Prevent Blindness, 1975) is a test of distance visual acuity. It is easy to administer and also useful for identifying suspected cases of amblyopia anopsia ("lazy eye"). The test employs the Snellen "tumbling E," and can be administered by a parent or other adult who will follow the simple instructions. In addition to its suitability for administration by a lay person, the Home Eye Test includes simple criteria for referral based on both the chart and a list of behavioral signs of vision problems. The Home Eye Test does not provide procedures for testing for muscle balance problems or hyperopia (far-sightedness).

° The San Diego Programs - The San Diego Pre-School and School Age Vision Screening Programs were developed and recommended by the School Vision

Committee of the San Diego County Optometric Society for use in the San Diego County Public Schools (Treganza, Lee, & Wilson; undated). There are procedures for both pre-school (10 tests) and school-age children (14 tests). The battery for school-age children is an expanded version of that designed for pre-schoolers, with added tests which are directly related to classroom tasks. The concepts, upon which the program is based, are a) that seeing is learned, and b) that a child with a vision problem cannot achieve in school to the full extent of his potential ability.

The authors make a distinction between an eye problem, described as refractive error or pathological involvement, and a vision problem, described as one which is related to a child's skill in seeing (e.g., eye movement control, focusing ability, eye-hand coordination). The authors suggest that, ideally, all children should be screened, but further suggest the following priority groups:

1. all pre-school children age 3 years or older.
2. all children in the first three grades of primary school as well as those in the lower 1/3 of their classes in the remaining three grades.
3. as an absolute minimum, all students who are underachieving according to the class norm or individual capability.

The tests are designed to be administered in part by lay personnel under the direction of an optometric consultant.

° The New York Battery - The New York State Optometric Association (NYSOA) developed a battery of vision screening tests (NYSOA, 1982). The battery consists of tests considered by NYSOA to be necessary for proper vision screening of school-age children, with emphasis on the "learner's visual needs as they apply to today's classroom environment". The screening covers

the following:

1. refractive error
2. accommodation
3. focus ability
4. convergence ability
5. muscle balance
6. fusion ability
7. stereopsis, binocularity
8. eye-tracking skills
9. eye-hand coordination and related skills
10. color perception

Initial validation of the battery compared results of its administration by a group of second- and third-year optometry students and PTA volunteers with results obtained in clinical examinations by fourth-year students and faculty of the State University of New York College of Optometry. Results were also compared with those obtained using the Snellen test. Out of 124 clinically identifiable problems, 110 were identified with the NYSOA battery, while only 30 were identified by Snellen alone.

One of the key features of the New York battery has been the use of the Keystone Telebinocular, an optic device costing several hundred dollars.

° Maryland Program - A procedure for vision screening of pre-school and school-age children in Maryland has been published in the Vision Screening Manual of the Maryland Department of Health and Mental Hygiene (1982). Vision screening for pre-school children (ages 3 to 6) consists of behavioral observation as well as testing of visual acuity, muscle balance, and stereopsis. For kindergarten through age 21, behavioral observation, visual acuity, muscle balance, hyperopia (after seven years of age) and color-vision procedures are

used. The Maryland Vision Screening Manual includes lists and descriptions of all procedures, materials and equipment needed, plus instructions for their use.

No validation data were available from Maryland at the time this report was written. This is largely because local counties, which have the responsibility for carrying out the screening, are not required to report their results to any central unit (Caplan, B. P., 1985).

° Modified Clinical Technique - The Modified Clinical Technique reported in the Orinda Study (Blum, Peters & Bettman, 1959). This program was basically the same as the Massachusetts Vision Test, with the addition of a retinoscopic examination and the cover test to help in identifying phoria, a tendency for one of the eyes to deviate from binocular fixation. This technique was found to be a valid screening method, but it has the disadvantage of requiring the services of an ophthalmologist or optometrist to perform the retinoscopy and the cover test.

° National Society to Prevent Blindness - The National Society to Prevent Blindness (NSPB) has published a pamphlet which sets forth principles and recommends procedures for vision screening of children (1982). This document includes recommendations for teacher and tester observation, visual acuity testing, and a test for muscle balance. NSPB also recommends a test for color blindness for each child at least once during his/her school years. The NSPB publication also makes general recommendations regarding the qualifications and training of personnel who will do the screening.

II. LEARNING DISABILITIES

Before one decides on how to identify children with learning disabilities, one must first deal with the problem of a practical definition of the condition. The success of any program of intervention is generally agreed to be dependent to a considerable degree upon early identification of the condition. A first objective of any screening program is to identify the children before they have a chance to experience failure (Slingerland, 1964). However, a learning disability is often referred to as a "hidden handicap," with identification made more difficult by the fact that the definitions usually employed are dependent upon some relationship between performance on school-related tasks and some measure of expected performance (e.g., intelligence tests and academic achievement test results). In addition, since reliable identification is so difficult, heavy weight is usually given to teacher recommendations (Swartz, Dykstra & McLaughlin, 1981). The reliance on teacher recommendations requires that the child be in school and is experiencing some difficulty.

Definitions

The problems related to selection of the appropriate definition to use in an early identification program are many. House Joint Resolution 127 requires that the project consider conditions which are consistent with the symptoms of dyslexia and dysgraphia. There is considerable controversy regarding the definitions of dyslexia, dysgraphia, and learning disabilities, and this fact complicates the process. In any case, it is important to recognize that differences among professionals do exist regarding the definition of terms under consideration in this project. An attempt to understand these differences and their bases will be presented.

Learning Disabilities Defined

The definition of learning disabilities has a history of some controversy, and although the literature indicates that it continues to be refined and "tightened," differences remain apparent. These differences present problems in the selection or design of assessment procedures, including those to be used in initial identification. Indeed, some professionals even express doubt as to the educational utility of the term (Epps, Ysseldyke & McGue 1984).

° Federal Legislation - The currently accepted definition for use in classification of children under federal special education legislation is:

> "Specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or of environmental, cultural, or economic disadvantages." (Section 5(b)(4) of P.L. 94-142).

° Virginia Definition - The Virginia State Department of Education has adopted the federal definition, with the additional qualification that the learning disability is such that it "adversely affects the child's educational performance" (Section 22.1-213, Code of Virginia, Effective 1985).

° National Joint Committee for Learning Disabilities Definition - A group called The National Joint Committee for Learning Disabilities (NJCLD) which is comprised of representatives from six professional organizations involved with learning disabled students (Heward & Orlansky, 1984) has proposed a definition that its members believe corrects some of the inherent weaknesses in the official federal definition. Specifically, the NJCLD was concerned about:

1. Exclusion of adults
2. Reference to basic psychological processes
3. Inclusion of spelling as a learning disability
4. Inclusion of obsolete terms
5. The "exclusion" clause.

The outcome of the NJCLD deliberations regarding these concerns was their proposed new definition of learning disabilities:

> Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g. cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences (National Joint Committee for Learning Disabilities, 1981, cited in Heward & Orlansky, 1984).

° Association for Children and Adults with Learning Disabilities Definition - The Association for Children and Adults with Learning Disabilities (ACLD),

an organization of parents and professionals which serves as an advocate for learning disabled individuals, has recently adopted its own definition. This definition differs from the federal and state definitions in several important aspects. It reads:

> Specific Learning Disabilities is a chronic condition of presumed neurological origin which selectively interferes with the development, integration, and/or demonstration of verbal and/or non-verbal abilities.
>
> Specific Learning Disabilities exists as a distinct handicapping condition in the presence of average to superior intelligence, adequate sensory and motor systems, and adequate learning opportunities. The condition varies in its manifestations and in degree of severity.
>
> Throughout life the condition can affect self-esteem, education, vocation, socialization, and/or daily living activities. (ACLD, 1984).

The ACLD definition also includes a two-page "Rationale" statement, justifying the use of all the key words in the document.

The ACLD interpretation of the term has not been accepted by all groups. For example, Gredler (1977) argues that learning disabled children are not a homogeneous group and may display a wide variety of specific problems. In fact, the ACLD rationale statement specifically states that the condition selectively interferes with abilities throughout the range of intelligence, and that the phrase, "of average to superior intelligence" was used to emphasize its co-existence even among those with very high potential (ACLD, 1984).

Common Factors Across Definitions.

All definitions currently in use have three things in common: (1) All

definitions recognize a discrepancy between expectation and performance, (2) All have some sort of criterion that can be interpreted as excluding certain groups of exceptional children, suggesting that learning disabilities cannot coexist with other handicapping conditions, and finally, (3) all definitions give recognition to the idea that learning disabilities require special education services.

* * * *

H.J.R. 127 specifies that the investigation should consider means of detecting learning disabilities "consistent with the symptons of dyslexia and dysgraphia." These two terms are discussed below.

Dyslexia

The term "dyslexia" also has a variety of meanings among professional groups. This condition, which today is most often considered to denote a subset of the larger population of learning disabilities, has been a subject of interest and concern among professionals in medicine, psychology and education for many years, and therefore predates the term "learning disabilities."

According to the Orton Dyslexia Society, dyslexia is defined literally as poor or inadequate learning or mastery of verbal language, or the inability to manage words (Orton Society, undated pamphlet). The society further states that dyslexia is a "kind of mind," rather than a disease that one might be cured of. There is some basis for the belief that in many cases dyslexia is familial in origin (Orton Dyslexia Society, undated), and fairly general agreement that the condition is not likely to be curable in the usual sense (Carey, 1984; Carris, 1983). It is a condition for which specific adjustments must be made in order for an individual to function satisfactorily. The individual is taught techniques for managing material to be learned in order to achieve optimum functioning.

Professionals often disagree substantially as to the meaning of the term "dyslexia." There are practioners, even among those whose major professional interest is the study and treatment of the condition, who feel that the term has no practical value as a label to be placed upon one set or group of reading problems (Otto, McMenemy & Smith, 1973). The World Federation of Neurology has defined dyslexia in a quite limited way, as "A disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity."

Lerner (1971) listed eight definitions of dyslexia, each emanating from a different professional point of view, many of which simply defined the condition as "inability to read," with the distinguishing characteristic being some sort of etiological basis. Lerner further cited the lack of conclusive pathological or statistical evidence to clearly isolate and identify the dyslexic child (p. 143).

Dysgraphia

Dysgraphia means a difficulty in writing properly (Waugh & Bash, 1971). During the past several years, various authors have considered dysgraphia to be either a subset of the term applying to a loss of ability to perform coordinated movements related to writing (Waugh & Bash) or a subsumption under the more general term related to reading problems, dyslexia (Critchley, 1975; Farnham-Diggery, 1978; Johnson & Morasky, 1977; Lerner, 1976). In our search, no tests specifically for dysgraphia screening were discovered, although several of the more elaborate batteries included subtests which require performance of writing or writing-like tasks as a part of their detailed assessment of learning disabilities.

Topics of Controversy

The field of education of learning disabled children has from its beginning been fraught with controversy, most of which has yet to be resolved. The controversy has developed regarding both assessment (including identification) and treatment.

° Early Identification - It is universally agreed that early identification of children with learning disabilities gives the best prognosis for change through intervention. However, a number of problems are involved in early identification. In the first place, just how early can a child with a learning disability be reliably identified? The behavioral manifestations often are not apparent until the child is confronted with reading, spelling, and other school-related tasks (deHirsch, 1964; Leigh & Riley, 1982). Behavioral symptoms which suggest problems resembling learning disabilities during the years before school are often due to varying rates and patterns of maturation or of the acquisition of skills prerequisite to school tasks. This variability is marked during the preschool years. Caution must be maintained against premature and indiscriminate labeling of preschool children as learning disabled (Leigh & Riley, 1982; NJCLD, 1985).

° Definition - As discussed above, the definition of learning disabilities itself has been the subject of controversy. Empirical studies indicate that achievement below expectation is the only "hard" or precise indication of a learning disability (Lloyd & deBettencourt, in press; Hallahan & Kauffman, 1977). Although the presumption of some disorder in psychological processing persists, and is not totally without empirical support, many educators prefer

the under achievement approach as the only one which is defensible, particularly because of a lack of acceptable tests to determine the existence of psychological processing disorders.

Approaches to Assessment

The most common approaches to assessment (including identification) are through the use of formal and informal tests. The tests employed include individual intelligence tests, standardized achievement tests, process tests, criterion referenced tests, and or subject specific informal inventories, which are limited in scope. Another approach is that of direct daily measurement, in which the specific behavior itself is observed and recorded (Hallahan & Kauffman, 1978; Heward & Orlansky, 1984). These techniques require considerable expenditure of time and skills.

Early Identification

The early identification of children with learning disabilities is fraught with uncertainty. Indicators of future performance are not always clear (deHirsch, 1964), and many procedures with a modicum of usefulness are often elaborate, expensive and time consuming (Lloyd & deBettencourt, 1984, in press). Indeed, there are professionals who suggest that some consideration should be given to whether it is reasonable to identify children as learning disabled in the preschool years. The critical factor in identification of children with learning disabilities is whether they have problems in one or more academic skill areas. Therefore, early identification of such children which focuses on preschool status would appear to be a contradiction in terms (Reid, 1977). Nevertheless, a body of research and professional opinion suggesting that some youngsters may be identifiable as at "high risk" for academic failure in the early years of elementary school exists, and that these children may be helped to avoid or minimize difficulties

difficulties (Slingerland, 1964; Belka & Williams, 1979; Litcher & Roberge, 1979; Lloyd & deBettencourt, 1984).

Assessment of children with learning disabilities can be an inordinately expensive proposition, but there is little basis for assuming that spending more money or time, or using more complex procedures, will produce greater reliability or validity (Shepard & Smith, 1983; Epps, Ysseldyke, & McGue, 1984). The latter group of authors has expressed the rather pessimistic conclusion that school personnel cannot diagnose LD students reliably, and suggest simplification of the process, with greater reliance on techniques such as direct daily measurement.

Approaches to Early Assessment

° Pre-Kindergarten Assessment - A number of studies have been carried out in the effort to find a valid, reliable, and economic approach to early assessment. Belka & Williams (1979) attempted to predict later cognitive behavior from early school perceptual-motor, perceptual, and cognitive performances using a multiple regression technique. They found that a battery of perceptual and perceptual motor tasks administered to pre-kindergarten children predicted cognitive performance at kindergarten level, but the best predictor of cognitive achievement for first grade and second grade was earlier cognitive performance.

° Kindergarten Assessment - Several batteries of tests have been developed for early identification of children at risk for school failure, particularly in reading and related areas, and most have been quite successful. However, these batteries present problems for those seeking valid and reliable screening instruments since they are lengthy, require elaborate procedures, and, in some cases, when compared with each other, have been found to identify different children (Lloyd & deBettencourt, 1984).

The Jansky Predictive [illegible]g Index (deHirsch, Jansky, & Langford, 1966) has been reported as useful in identification of potential reading failures among kindergarten children, and to provide the basis for extended readiness classes between kindergarten and first grade (Orton Society Bulletin, 1973, Vol. 23). However, this entire process reportedly was criticized and modified because of administrative concerns that the assessment process was too time consuming (Tower, personal communication, 1985).

° For a number of years the Slingerland Screening Tests for Identifying Children with Specific Language Disability (Slingerland, 1972) have been one of the commonly used tool of those who provide assessment and special education services for children with learning disabilities. Since it has in its title the word, "Screening," it was felt to be worthwhile to examine some of the literature pertaining to them this diagnostic instrument.

The battery consists of nine tests employing several input and output modalities. They are considered to be appropriate for grades kindergarten through six, and can be group-administered.

The Slingerland tests, while useful in many aspects of the learning disabilities educational program in schools, is not recommended here as the screening device for use with preschool children, since it is not designed for use with children below kindergarten age.

° Environmental Factors - Environmental factors have been examined and found to be useful as predictors of achievement deficits. In these studies, no particular efforts were made to attribute problems to specific causal factors. Rather, emphasis was placed upon the identification of factors having high positive correlations with early school failure (Lloyd & deBettencourt, 1984). For example, staff members of the Carolina Abecedarian Project (Finkelstein & Ramey, 1980; Ramey, Stedman, Borders-Patterson, &

Mengal, 1978) have discovered that information available on birth certificates can provide the basis for discrimination between underachieving and normally-achieving first grade children. The factors which seemed to be most useful were (a) race, (b) having an older sibling who died, (c) mother's educational level, (d) birth order, (e) legitimacy, and (f) month of pregnancy when prenatal care began. Although, further screening might be necessary between birth and kindergarten entry in order to increase the validity of the total screening procedure, this simple procedure shows promise of increasing the efficiency of the process by providing a very early indication of which children are likely to be high risk.

° Medical Factors - Certain medical factors have been investigated as possible predictors of hyperactivity, an indicator or correlate of learning disabilities in some cases. Hartsough and Lambert (1985), in a study of 492 children, found several prenatal or perinatal variables to be the best predictors of subsequent hyperactivity. These several variables, from a total list of 30 prenatal and perinatal factors, developmental milestones, childhood illnesses and accidents, and childhood health variables, were:

1. poor maternal health during pregnancy
2. young mother (under age 20 at the birth of the child)
3. postmaturity (10 months or later)
4. long labor (13 hours or more)
5. toxemia or eclampsia during pregnancy
6. fetal distress during labor or birth
7. problems in establishing routines during infancy (eating, sleeping, etc.)
8. prematurity, particularly low birthrate

One other variable, not a prenatal or perinatal factor, was also found to be

significantly related to hyperactivity; this was a history of health problems in infancy. Thus, Hartsough and Lambert found a total of eight variables which could be used as predictors of hyperactivity.

It should be pointed out that at present these variables are simply early correlates of later hyperactivity, as the variables identified in the Carolina Abecedarian Project are early predictors of underachievement in first grade. Further research needs to be carried out in order to clarify and validate them. However, such an approach would seem to be worthy of some commitment of time, personnel, and financial resources.

III. LEARNING DISABILITIES AND VISION

Are Vision and Learning Disabilities Related?

Numerous references in the literature suggest a possible relationship between visual anomalies and learning disabilities (Evans, Efron, & Hodge, 1976; Helveston, 1968; Keogh, 1974; Keogh & Pelland, 1985; Davis, 1982; Coleman, 1972; Goldberg, H.K., & Drash, P., 1968). However, extant definitions would seem to preclude, or at least render difficult, any assumption of a causal relationship. The presumption of neurological damage, as in the ACLD definition, suggests that one should at least keep an open mind regarding relationships between conditions related to any part of the central nervous system, including the visual portion, even though research so far has failed to demonstrate conclusively any direct relationship between vision and learning disabilities (Keogh, 1974; Keogh & Pelland, 1985). A prudent attitude at present would seem to be neither acceptance nor rejection of the idea of a causal relationship, since weaknesses in research design and methodology prevent clear acceptance of assertions of either point of view.

° The American Academy of Ophthalmology (AAO), with the concurrence of the American Association for Pediatric Ophthalmology and Strabismus (AAPOS), published a policy statement on learning disabilities, dyslexia, and vision, asserting that:

1. Dyslexia and learning disabilities are an educational problem.
2. Early identification and educational treatment are important for successful remediation.
3. Eye care should never be instituted in isolation.
4. A dyslexic child should have a thorough evaluation for general medical, neurological, psychological, visual, and hearing defects.

5. According to findings from a number of studies, children with dyslexia and associated learning disabilities have the same incidence of ocular abnormalities as children without dyslexia and associated learning disabilities.
6. There is no known peripheral eye defect which causes dyslexia and associated learning disabilities (American Academy of Ophthalmology, 1981).

Other writers tend to agree fundamentally with the AAO position that eye problems do not cause learning disabilities (Evans, Efron, & Hodge, 1976; Helveston, 1968; Helveston, et al, 1985; Goldberg, Schiffman, & Bender, 1983). However, subtle, and sometimes not so subtle differences have characterized the positions of others with respect to the question of whether some relationship exists between defects somewhere in the visual system--not necessarily the peripheral vision system--and learning disabilities.

Goldberg, Schiffman, & Bender (1983), while agreeing that there appears to be no evidence of a relationship between visual ability and learning disability, nevertheless, have reported findings that lack of coordination among certain central nervous system functions related to vision (visual memory, visual sequencing, visual perception) may result in a reading disability.

The response from certain sectors of the optometry profession to the AAO position has been sharp and highly critical, including charges of "gross distortions and inaccuracies" (Flax, Mozlin, & Solan, 1984, p.399). However, even as they attempt to discredit the basis of the AAO statement, Flax, et al. concede that optometry is not ready to endorse a position claiming that the relationship between vision and learning disabilities is unique and causal, as is suggested in the AAO statement.

Both the AAO policy statement and the Flax, et al. rebuttal seem to be emphasizing a sharp difference between the two groups. From the standpoint of

the need for differentiating between the two professional groups, this is understandable. However, on the surface at least, there seems to be less basis for such sharp disagreement. While there is some evidence that a relationship exists between learning disabilities and the physiological, neurological and psychological aspects of vision, there appears to be at least some agreement that no empirical evidence presently exists to justify a position that there is a causal relationship. In addition, as several researchers and reviewers suggest, there is at least enough evidence to justify keeping an open mind on the subject of a possible relationship of some kind between vision and learning disabilities, whether it is one strictly of mechanics or something related to central processes (Evans, Efron & Hodge, 1976; Goldberg, Schiffman & Bender, 1983; Keogh & Pelland, 1985).

° There is some indication that the differences, or at least some of the uncertainty, might be cleared up if disparity in definitions were reconciled, or if some agreement on terminology connected with the area could be reached. The California State Department of Education recently awarded a contract to the Fredric Burk Foundation at San Francisco State University, following a mandate from the California State Legislature, under Assembly Bill 933 (AB 933). This legislation mandated that the State Department of Education contract for a study to:

1. Examine the process of identification of children with exceptional needs to determine the extent of misdiagnosis of individuals with perceptual problems resulting in placement of those individuals into classes.

2. Create an evaluation team of one neurologist, one pediatrician, one ophthalmologist, and one audiologist, each trained in the diagnosis of perceptual handicaps; one optometrist trained and experienced in the identification of visual perceptual handicaps and visual therapy; and one educator trained

and experienced in areas of special education dealing with perceptual learning disabilities.

3. Examine children currently placed in special day classes for the children identified as learning handicapped or severely handicapped, with emphasis on mentally retarded and seriously emotionally handicapped children.

4. Place children who have been determined to have perceptual handicaps in appropriate classes designed for children with learning disabilities according to the recommendations of a majority of the team and the concurrence of the individualized education team for a period of not less than one year.

5. Select children from at least one class in each of three city school districts (San Diego Unified School District, Los Angeles Unified School District, and San Francisco Unified School District) with an additional class from a rural school district and a class from a suburban school district, to examine the process of identification of individuals with exceptional needs, and the extent of misdiagnosis (Bradfield, 1983, p.1).

When the contract for the project was finally awarded, it was agreed that the project would be involved only with the diagnostic portions of AB 933, and would not affect the placement of any children evaluated, whether or not they were found to have been misdiagnosed. Evaluation teams were selected according to the specifications of the law. The only member common to all of the teams was the educator/psychologist, who was responsible for educational evaluations on all children in the project. A total of 61 students (38 males, 23 females) ranging in age from seven to fourteen years, were selected from the three city school systems mentioned above, as well as from the San Mateo Elementary School District (suburban) and a school under the Superintendent of the Fresno County Schools (rural).

Independent assessments were completed by each of the specialists on each team. A series of nine major questions were posed for answering by the project, and were cast in the form of null hypotheses in the formal report. These questions were:

1. To what extent have diagnostic differences occurred in the assessment and placement of children who are currently enrolled in special day classes for learning disabled, mentally retarded, and severely handicapped children?

2. To what extent have perceptual disabilities been overlooked in the assessment and placement of children who are currently enrolled in special day classes for learning disabled, mentally retarded, and/or severely handicapped children?

3. Does assessment by a multidisciplinary team significantly alter the diagnostic conclusions obtained when only an educational/psychological assessment has been completed?

4. Are there significant differences in the specific diagnostic conclusions reached by different disciplines?

5. Have children been placed in special day classes for learning disabled, mentally retarded, and/or severely handicapped children as a result of inaccurate diagnosis?

6. What specific perceptual problems are most frequently overlooked, misidentified, or misdiagnosed?

7. To what extent have similar diagnosis of children in special day classes for the learning disabled, mentally retarded, and/or severely handicapped led to similar IEP's?

8. Does the independent evaluation team agree with the IEP recommendations on children placed in special classes for the learning disabled, mentally retarded, and/or severely handicapped?

9. Is there a difference in the occurrence of misdiagnosis of perceptual dysfunction in children diagnosed as learning handicapped, mentally retarded, and/or severely handicapped?

The team members found that existing school records were adequate with regard to diagnostic information in the neurological, general health, and psychological domains, but considered them to be weak in the assessment of vision and hearing. With regard to perceptual difficulties which might have been overlooked in placement, relatively few were identified by the team members. However, the audiologist and optometrist identified more cases than did team members from the other professions. In particular, there were significant differences noted between the two vision specialties; the optometrists cited more instances of perceptual difficulty than ophthalmologists. Although considerable differences existed with regard to the diagnostic conclusions of different specialists, the author indicated that this appeared to be more a function of professional focus than of conflicting diagnoses.

All specialists agreed that 50 of 57 students were appropriately placed, one was misplaced, and two had insufficient information to judge. Disagreement on the appropriateness of placement existed on four students. In addition, all specialists agreed that educational objectives were appropriate for 45 students, and inappropriate on one. Disagreement existed on eight cases.

Although considerable differences between ophthalmologists and optometrists existed regarding the presence of perceptual problems, the differences in interpretation of the term "perceptual" seemed to be a major factor (Bradfield, 1983, p. 4). Of greater concern perhaps, although it is not germane to the Virginia HJR 127 project, is the extremely high percentage of children in the California study who were found to have a previously unidentified auditory perception problem.

In summary, although the law which gave rise to the California project appeared to be based on an assumption of what might be termed rampant misdiagnosis and misplacement, major problems of this type in the vision area did not seem to be present. However, the suggestion of differences between optometrists and ophthalmologists on the definition of the term "perceptual" as an explanation of differences in diagnosis, is an area that seems to require further study and resolution if there is to be a way out of the impasse which may be preventing progress.

The Implicit Question: Vision Training and LD?

Although it is not specifically provided for in HJR 127, an inescapable conclusion from a reading of the background materials submitted to the General Assembly sponsor of the Virginia resolution is that vision training was a major concern. A large number of materials from professional journals, magazines, and newspapers, providing documentation of the value of visual training exercises for children with learning disabilities, were made available to the sponsor of the bill.

The subject is not a new one, nor is it a phenomenon new even in the past quarter-century. However, since 1960, vision training has been the subject of intense attention by a number of professions. It was then that G. N. Getman and his colleagues organized the Children's Care and Guidance section of the Optometric Extension Program for a twofold purpose:

1. to provide a way to make the visual philosophy and techniques available to optometrists; and
2. to enhance the relationships and applications to education (Keogh, 1974).

Research continues into various applications of vision training with learning disabled children. The staff of the American Institutes of Research

(AIR) has recently published a report on use of computers with the learning disabled (Weisgerber, 1984), in which a suggestion was made that computers may be useful as media for treatment of reading dysfunctions through a program of vision training. AIR has proposed a research project to investigate its effects. The AIR proposal includes collaboration of the University of California School of Optometry at Berkeley, the Fremont, California, Union High School District, the Bernell Corporation, and CATT, Inc. (AIR, 1985, unpublished proposal).

Two comprehensive reviews of the literature related to vision training, completed approximately ten years apart by Barbara Keogh of the University of California at Los Angeles (Keogh, 1974; Keogh & Pelland, 1985), reveal some difficulty in drawing many solid conclusions regarding the effectiveness of such programs. In 1974, Keogh found a "lack of substantive and comprehensive evidence on which to make decisions as to program effects" (p.227). More specifically, Keogh has pointed out (1985) that perhaps a major reason for some of the difficulty is that it is nearly impossible to pin down a definition of vision training--that there is "not a single prototypic program model" (p. 228). Programs described in the literature feature such widely diverse activities and materials as tracking workbooks, lenses, prisms, filters, and gross motor exercises. There seem to be no professional standards for duration of training programs or procedures. In both reviews Keogh was critical of research standards in many studies as another factor which compromises their validity. Furthermore, this situation has not shown improvement since the first of the Keogh reviews in 1974. Other problems mentioned were the need for clearer specification of subject characteristics and delineation of conceptually and empirically defensible subgroups. These problems quite possibly may be due to the continuing difficulty in defining learning disabilities, and

the lack of adequate comparison groups or controls (Keogh & Pelland, 1985). Consequently, according to Keogh & Pelland, while there is some limited evidence from certain studies that visual training is effective, there is a lack of clarity as to precisely who benefits and under what conditions.

Vision Training as a Medically-Related Form of Treatment

No review of vision training would be complete without at least some mention of its consideration as a form of medical treatment, a continuing source of controversy. The Department of Health, Education and Welfare (now Health and Human Services), has included vision training under its Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program as a part of preventive health care for children below 21 years of age receiving Medicaid. Vision training also was at one time covered under the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). The support of this form of treatment was deleted from CHAMPUS coverage, effective March 9, 1975 (Comptroller General Report, 1979), but is not excluded from EPSDT if an individual state permits it.

In summary, there seems to be little consensus about content or appropriate targets for vision training, and little definitive evidence of its effectiveness. The conclusions of the 1985 Keogh and Pelland review seem to be basically the same as those reached in 1974. Nevertheless, as Keogh & Pelland take pains to concede, from "a voluminous clinical literature we are left with a nagging feeling that there may be some merit in the approach, at least for selected children and for particular kinds of problems" (p. 234). There is still a need for research which will make a careful and systematic test of visual training methods.

IV. CURRENT PRACTICES IN VIRGINIA PUBLIC SCHOOLS: VISION SCREENING

It was decided to attempt to determine, if possible, how the public schools of Virginia carry out the process of screening for early identification of children with visual impairment. Questionnaires were sent to all 140 of Virginia's school divisions, under a Superintendents' memo. The questionnaires, a sample of which may be found in the appendix, requested information on the procedures used for vision screening, those responsible for administering them, criteria for referral, and procedures for referral and follow-up.

Of the 140 questionnaires sent, 87 were returned, a rate of 62%. Not all respondents answered all questions, and therefore total responses are not always 87.

Since one of the major purposes of the project was to answer questions regarding the early screening for visual defects, emphasis of the survey was placed on screening at the preschool and kindergarten levels. Table 1 shows the results for Child-Find, preschool handicapped and kindergarten.

Table 1

Number of School Divisions Which Provide Early Vision Screening

Child-Find	Preschool Handicapped	Kindergarten
46	55	80

It will be noted that 80 school divisions reported that they routinely carry out vision screening at the kindergarten level, 55 in the preschool handicapped program, and 46 in the Child-Find program. Eighty one divisions reported screening at least one of the above levels, and five do no screening at all before grade one. Twenty-seven reported screening K-12 every year, and two of those responding reported no vision screening program.

Who does the screening?

Table 2 shows the responses to question 2 in the survey: Who does the screening? Some respondents reported that several people are involved in carrying out screening, so the total number is considerably higher than 87.

Table 2

Persons Reported as Vision Screeners

School Nurse	55
Public Health Nurse	23
Physical Education Teacher	31
Classroom Teacher	27
Teacher Aide	9
Trained Technician	3
Parents or Other Volunteers	16
Optometrist	2
Ophthalmologist	3
Others*	17

* "Others" include Vision Teacher (5), Lions Club (5), Volunteer Nurses or Nursing Students (3), Mothers Club (1), Local Physician (2), Special Education Teacher (4), Health Service Aide or Clinic Aide (3).

The most likely vision screeners would seem to be nurses, with physical education teachers and regular classroom teachers in rather distant second and third places.

Tests and Procedures Used

A total of 19 different tests and procedures were reported to be in use, although only three were reported with any degree of regularity (See Table 3 on the following page).

Table 3

Vision Screening Procedures Used

Snellen, Distance	63
Snellen Distance with Plus Lens	8
Massachusetts Vision Test	3
Titmus Vision Tester	50
Keystone Telebinocular	14
Modified Clinical Technique	0
Other	14

Note: Totals exceed the total number of questionnaires received because some school divisions use more than one method. No one reported using the Modified Clinical Technique, probably because it requires several minutes to complete, and a part of the procedure must be done by an opthalmologist or optometrist (Blum, et al., 1959).

Of the 14 "Other" responses, only the Denver Eye Screening test was mentioned more than once (2). The time-honored Snellen chart is still the most popular of the screening tests; the Titmus is used almost as much as the Snellen, but it is probably used most frequently simply for distance visual acuity screening.

Tests Other Than Distance Acuity

Since the literature on the relationship between vision and learning disabilities mentioned near-point acuity and fusion with considerable frequency, a question was included to ascertain the degree with which these were checked in schools. Only 56 school divisions, of the 87 who responded, test for near-point acuity, while even fewer test for strabismus (43) or for fusion, muscle balance or other motility problems (44). Twenty-nine of the responding school divisions reported testing in all three areas. Twenty-three respondents

reported that they do no screening for any of these problems.

Training of Screeners

The data received in response to this question were very difficult to interpret due to the wide variety of responses received. Sixty-five respondents specifically mentioned that some sort of training has been received by the persons who do the screening, including that received by nurses, teachers of visually impaired children and others as part of their preservice training programs. Most of the 65 respondents reported that some sort of inservice training is delivered to those responsible for screening, usually by school health personnel or service club volunteers (e.g. Lions).

Rescreening

Responses to questions in this area were also quite difficult to interpret. Of the responses which were interpretable, 18 listed a visual acuity of 20/40 as a criterion for referral, and 18 listed 20/30. Three listed a muscle balance problem as cause for referral, but cited no specific standard. Others made statements similar to, "If the child fails the test, referral is made."

Sixty-seven respondents stated that a second screening is done, before a referral is made, on those children who fail, and 19 responded either that no second screening is done or made no response to the question. In response to the question of who does the second screening, the person most frequently mentioned was the nurse (39). For the remainder of responses, a variety of people were listed, with no one type showing up in significant numbers. Responses ranged from "same as first screen," to "special education teacher," to "physical education teacher."

Referral and Follow-up

When it has been determined that a child should be referred for further

examination or treatment by a specialist, a substantial majority indicated that the referral was made directly to the parents or to the home, by letter or telephone (67 responses). Six responses were too vague to be interpreted, six gave other procedures, and seven responded "none" or gave no response. One school division responded that the referral is made to both the parents and to an eye specialist.

Reports from the examining specialist are sent to the school, at least part of the time, in 54 cases. In addition, 39 respondents specifically mentioned that the home is contacted after the referral to increase certainty that a referred child receives the recommended examination. Many others mentioned referral to school nurses or school health coordinator; other responses indicate a possibility that someone in the school will follow-up.

Thirteen schools responded that no follow-up in the school occurred after the examination, or that the next step was "unknown," and four respondents did not answer the question. The remainder at least had some type of internal referral to appropriate persons, a follow-up with parents, or recorded the examination outcome in the pupil's permanent record.

Children Found to Need Further Treatment or Examination

Seventy-two school divisions responded to the request for the percentage of children screened who required further attention. The range was wider than expected, from 1% to 79%. However, examination of the responses revealed that 64, or 89% of the respondents, reported referral rates of 15% or less. The inordinately high figures might have been due to either a misunderstanding of what was meant by the term, "referral," or to the fact that large number of relatively poorly trained persons were involved in the screening, who preferred to err on the positive side rather than take the chance of missing a child who needed attention.

Evaluation

The final question on the survey was to determine how adequate the respondent thinks the local vision screening is. All 87 respondents answered this question, and the results are given below, in Table 4.

Table 4

Adequacy of Local Vision Screening Programs

Very Adequate	31
Adequate	37
Barely Adequate	17
Very Inadequate	2

Summary

Based on the results of this survey, most of Virginia's schools apparently are carrying out some form of vision screening and subsequent referral for those children who are found to be in need of further examination or some corrective treatment. However, a smaller fraction of schools is screening before a child enters kindergarten, leaving the possibility that a child with vision problems might not receive appropriate attention before he/she needs to make intensive use of vision in a formal learning situation. The survey indicates that some local divisions are not in compliance with Virginia regulations regarding vision screening (see Appendix F). In addition, it appears that vision screening is not being done routinely as part of the Child Find effort.

V. CURRENT PRACTICES IN VIRGINIA PUBLIC SCHOOLS: EARLY DETECTION OF LEARNING DISABILITIES

A total of 140 survey questionnaires was sent. The purpose of the questionnaire was to determine, to the extent possible, the current practices in screening for early identification of children with learning disabilities. The term "early identification" was left open for interpretation by each school division. Eighty five questionnaires were returned, a rate of 61%.

The first question posed by the survey was, "Does your school division carry out any systematic screening for the early detection of learning disabilities?" If this question were answered in the negative, the respondent was asked to skip to the demographic portion of the questionnaire at the end. Positive replies were received from 29 respondents. Of these, 20 indicated, additionally, that procedures were carried out for identification of dyslexia, and 19 indicated procedures for identification of dysgraphia. One of the latter group indicated use of procedures for early identification of dysgraphia without concomitant procedures for other learning disabilities or dyslexia.

With such a small proportion of the total number of responses available for analysis, caution in interpretation seems advisable.

Procedures and Instruments

Twenty-seven different tests, batteries, screening programs or procedures were identified by the respondents who answered the questions pertaining to this matter. No one procedure or program was mentioned more than three times, and only three fit that category; one procedure was mentioned twice. The list of those identified is given in Appendix G.

The questionnaire specifically asked for the age at which the screening procedures are used. Eighteen of the respondents gave an answer to this ques-

tion, seven of whom indicated that they begin screening at age two, and two indicated starting at age one. Five indicated that they first use their screening procedure when a child is at age four. Four start with five-year olds, and three responded with grade levels, indicating that screening begins in kindergarten.

Who Screens?

In most of the schools responding, more than one person is responsible for doing the screening, with the specific portion of the screening procedure determined by the professional qualifications and orientation of the person carrying out that portion of the program. The numbers of school divisions reporting screening being done by each of the professionals are listed in Table 5 below.

Table 5

Screeners for Early Identification of LD

Classroom Teacher	14
Special Education Teacher	16
Psychologist	4
Nurse	9
Speech Therapist	9

Special training of some sort for those who carry out the screening was indicated as part of the program by 22 of the 29 respondents. Five of the respondents indicated that a program of in-service training is offered. Responses from others were not possible to summarize numerically. Most commonly mentioned was the title of the person who does the training, or a statement that training was given in the specific procedure that is used in screening.

Referral

Responses relating to the criteria for referral were difficult to pin down, as were some of those mentioned in the vision screening survey. Fourteen respondents gave specific answers to this question, which are summarized in Table 6 below.

Table 6

Criteria for Referral for Early Identification of LD

Failure of test; or "according to test procedures"	3
Child Study Committee Decides	3
No Rigid Criteria; Subjective; Clinical Impressions	3
Failure to Show Progress; Significant Delays	3
"20/40"; "Continues to have vision problems" (These two responses apparently were intended to refer to vision screening).	2

Fourteen questionnaires included responses to the question relating to the percentage of children who are referred as the result of the screening. The figures given ranged from 1% to 80%. One can only speculate about such high figures as 20%, 30%, 40%, 60%, and 80%. However, it seems reasonable to assume that with figures this high, screening is not really screening in the usual sense at all, but consists of procedures carried out with children referred because problems are already apparent, and they, therefore, have a high probability of a positive outcome.

Evaluation

A summary of the twenty-seven responses received regarding the adequacy of local screening programs for the early identification of LD are shown in Table 7 on the following page.

Table 7

Adequacy of Local Screening Programs for Early Identification of LD

Very Adequate	10
Adequate	10
Barely Adequate	7
Very Inadequate	0

Among the responses to the request for suggested improvements to the early screening program for identification of children with learning disabilities there was a suggestion that better procedures, methods, and tests were needed (3 responses). There was also a call for better training, presumably for those who administer the tests (2 responses). The remainder of the 22 responses to this question mentioned the need for further involvement of teachers, more involvement of parents, having the testing done by specialists rather than teachers, and one said there was a need for more extensive testing.

Summary

The fact that most of the respondents indicated that they do not conduct early screening for learning disabilities might be related to the fact that the Virginia definition of learning disabilities implies that LD must be a condition of difficulty or failure to achieve on formal school-related tasks. Another contributing factor may have been the fact that the term "early identification" was left to the school divisions' interpretations.

VI. CURRENT PRACTICES IN VIRGINIA PUBLIC SCHOOLS: VISION-RELATED PROBLEMS OF LEARNING DISABLED CHILDREN

The questionnaire was sent out to all 140 school divisions in Virginia. Eighty-five questionnaires were returned, a rate of 61%. The purpose of the survey was to ascertain the practices currently in use for the early identification of children with vision-related learning disabilities.

The first question was, "Does your school division carry out any systematic screening for the early detection and treatment of visual-related problems of learning disabled children?" Instructions were that if the answer to that question were negative, the respondent was to skip to the demographic section at the end of the questionnaire.

Of the 85 respondents, 26 answered in the affirmative to the first question, so the data for the rest of the survey were based on a maximum of 26 responses.

Procedures

Twelve procedures were listed as part of a screening process by the school divisions which responded. These are enumerated in Table 8, on the following page, with the number of schools mentioning each procedure.

Table 8

Procedures Used in Screening for Visual-Related LD

Drawing a Circle	1
Human Figure Drawing	1
Titmus Vision Tester	5
Snellen	3
Atlantic City Battery	1
Keystone Peek-a-Boo	1
Keystone Telebinocular	3
DIAL	1
Drawing Coordination Test	1
Classroom Observation	1
Santa Clara	1
Lighthouse Cards	1

The total number of responses that identified procedures was 17. Three of these listed the Snellen Chart; eight listed the Titmus Vision Tester or Keystone Telebinocular; and three mentioned at least two of the above vision screening tests. Only one respondent indicated the time of year when the screening is done (fall). Sixteen indicated that the screening is first carried out at the kindergarten level, while ten respondents did not specify any grade level.

The persons who were listed as responsible for the screening are shown in Table 9, on the following page.

Table 9

Person Responsible for Screening for Visual-Related LD

Special Education Teacher	6
Regular Classroom Teacher	9
School Nurse	14
Parents or Other Volunteers	8
Others*	5

* Lions Club Representative, Physical Education Teachers, School Psychologist.

Note: The total of the responses above exceeds 26 because some respondents indicated that the screening is carried out by more than one person. Two in the "Other" category indicated no specific person, while two who did not check "Other" did specify someone other than those listed on the form (Health Nurse; School Psychologist-Aide), so the total of the "Other" category should read 7, instead of 5.

Sixteen respondents indicated that the persons who carried out the screening had special training in the techniques of screening. However, none gave any descriptions of the training.

The following "criteria" for referral were mentioned at least once, with no single statement mentioned more than three times.

- Developmental criteria
- Failure of test
- Two failures at different intervals
- Visual Acuity Guidelines (each includes a specific visual acuity cutoff)
- Failure of a specific number of items
- Deficits noted in screening process
- School psychologist

° Severity of the problem

° Fail two or more subtests

° Subjective

° Number of errors, category, grade level, vision (sic) acuity

Prescribed Treatment

An attempt was made to determine who was responsible for delivery of any intervention program which resulted from the assessment process. The 12 responses to this question are summarized in Table 10 below.

Table 10

Provider of Intervention after Screening for Visual-Related LD

Doctor/Specialist	8
Parents Choice	2
School Nurse	1
Vision Specialist	1

Responses (12) to the attempt to ascertain the nature of any treatment carried out noted a variety of outcomes as can be seen in Table 11 below.

Table 11

Nature of Treatment for Visual-Related LD Problems

Stress therapy	1
Corrective action	1
If a medical problem, provider of parents' choice	1
Refer to ophthalmologist for diagnosis and treatment	1
Lenses are prescribed	3
Referral to Child Study Committee	1
Consultation with teachers	1
Send letter to parents	1
Eye examination	1

Regardless of the type of treatment, all school divisions replying to this question indicated that the school receives reports from the person who delivers the treatment.

The percentage of children who are found to require treatment was submitted by 10 respondents. As with the other two areas surveyed, there was a wide numerical spread, from one percent to 50%. Nine of the ten responses indicated referral rates of 20% or less. Still, this tiny sample showed consistency with the results observed in the surveys of the visually impaired and learning disability areas, and shows, if anything, great lack of consistency among Virginia Educators in treatment of this combination of conditions.

Evaluation

Twenty-three of the respondents gave opinions on the adequacy of the screening program in their school divisions. The results are shown in Table 12 below.

Table 12

Adequacy of Local Screening Programs for Visual-Related LD Problems

Very Adequate	5
Adequate	12
Barely Adequate	3
Very Inadequate	3

Only one respondent gave a suggestion for improvement of the program. The suggestion was that in-service training be provided for nurses and educational staff so that they might clearly understand the relationship of visual-related problems to learning disabilities.

Comments From Respondents

The survey in the area of vision-related learning disabilities, alone among the three surveys in this project, drew comments from some of those who responded. The comments were expressed in terms which were highly professional and had an air of objectivity. They showed thoughtful consideration and concern for this very nebulous area. The comments were also idiosyncratic, showing no discernible group patterns.

One person expressed the opinion that this topic is not an appropriate concern for special educators, since it is not defined under education regulations, and constitutes an unreasonable burden. Another, along the same line, ventured the opinion that the topic of vision-related learning disabilities is not germane because of the exclusion phrase in the definition of learning disabilities; this party underscored the point by enclosing a copy of the 1985 Virginia definition of learning disabilities with the exclusion phrase circled.

One respondent indicated that visual processing problems are identified for the Eligibility Committee, but a screening process has not been implemented which identifies processing deficits. Similarly, another indicated that if vision-related problems of learning disabled children are suspected, a referral is made, through the parents, to an eye specialist for evaluation.

Two respondents indicated that they thought hearing and language problems were more closely related to learning disabilities than are vision problems. This position is supported by the results obtained in the California study (Bradfield, 1983).

One comment was made which is consistent with some problems that have been noted in the review of the literature in both learning disabilities and vision-related learning disabilities. That is, there is a need for a clear definition of the condition, which is not available at present.

Finally, one respondent enclosed a list of 18 tests and procedures in answer to question #2, which asks for a description of the instruments and procedures used for screening. The list included nearly all those which had been mentioned by all the respondents put together. One wonders whether all are used for screening in that school division.

Summary

It would appear, based on responses to this section of the survey, that most school divisions do not have procedures for "early detection and treatment of vision-related problems of learning disabled children." Analysis of the responses received from school divisions which do have procedures in place indicates that there are at present no discernible commonalities in the detection and treatment of vision related problems of LD children in Virginia.

VII. INTERVIEWS ON "BEST PRACTICES"

In order to sample opinion of professionals who are interested in the conditions that are the subject of this project, it was decided to interview a representative group of persons from education, psychology, ophthalmology, and optometry, regarding their professional opinions. The interviews, with one exception, were carried out by telephone. A brief protocol was developed in order to be sure that a reasonable degree of consistency would be maintained. The protocol was designed to elicit opinions regarding what the interviewees considered to be "best practice" in assessment of children's visual impairment, early detection of learning disabilities, and vision-related learning disabilities. A copy of this protocol may be found in Appendix E.

Names of approximately 50 possible interviewees were received from the members of the HJR 127 Advisory Committee, and from these a total of fourteen were selected. The persons interviewed possessed the following professional orientation:

Developmental Pediatrician	1
Ophthalmologists	2
Optometrists	2
Private Dyslexia Clinic Personnel	2
Psychologist in Private Practice	1
Private Special School Administrator	1
Public School Special Education Administrator/Supervisor	4
Special Education Faculty Member from a School of Optometry	1

The interviews were usually carried out by appointment, at a time when the parties interviewed had indicated they would have sufficient time for discussion or exploration of the issues. Most of the interviews became rather wide-ranging discussions, with more than just the questions on the protocol being touched upon. In spite of the "free-wheeling" nature of the talk, it was possible to discern some areas of consensus and a few areas of near-unanimous agreement.

All interviewees agreed that early screening for the problems in question would be a good thing, and the earlier done the better. More importantly, all interviewees mentioned that the one essential ingredient of any attempt at early screening in all areas is a thorough developmental history, so that children with a high risk of developmental and educational problems might be identified and monitored from the early stages. Beyond this one very important area of broad agreement, the opinions varied according to professional orientation and the specific condition being discussed. With only a few exceptions, persons interviewed seemed to be cautious about expressing opinions on subjects outside the scope of their specific profession.

Vision Screening

It was generally agreed that children should be screened for possible vision problems well before entering school. While some of those responding felt that age two years would not be too young, and one person even suggested that six months or earlier would be appropriate, although not really practical, the consensus seemed to be that age three years would be the appropriate time, and that the child should be screened annually thereafter until adolescence. It was felt that during the secondary school years, unless there was evidence of vision problems such as a progressive condition, every two years would be adequate. At the very latest the first screening was felt to be necessary

before the child enters a formally structured situation like school, where the vision would need to be used regularly with some precision.

It was felt by the interviewees that all children should be screened each time for both near and distance visual acuity, amblyopia or its precursors, and strabismus or muscle imbalance. The procedure must be cost effective, quick, easy, and should avoid over- and under-referrals as much as possible. While over-referrals are generally considered to be undesirable because of the negative attitudes that result from a parent's having to pay for a clinical examination when no serious problem exists, several of the interviewees indicated it would be better to err on the side of over-referral than under-referral, if an error were to be made.

Standards for referral from the test of visual acuity which are almost always recommended (both from the interviews and the literature), are 20/40 corrected vision in the better eye, or a difference of more than one line on the chart, between an individual's two eyes. Standards for the other tests recommended are usually provided along with the test.

There is a potential problem of reliability when screening for vision problems with very young children, and a direct relationship between the age of the child and the reliability of the test, according to several of the interviewees. In addition, machines that require the subject to look through a viewer during the testing, such as the Titmus Vision Tester and the Keystone Telebinocular, also have a tendency to reduce the reliability of the results. Therefore, with young children, the simpler the procedure and equipment to be used, the greater the likelihood of reliable results.

Early Detection of Learning Disabilities

With the area of learning disabilities there was little clear agreement over the possibility of screening preschool children at all, let alone

discussing methods and referral criteria. Several of the interviewees stated that because practically all definitions of the condition referred to a discrepancy between expectation and performance on academic tasks, they felt that identification before a child enrolls in school is impossible.

There seemed to be some difference of opinion about what constitutes screening for learning disabilities, with some interviewees defining as screening the administration of a battery of clinical tests, while a few at the other extreme felt that the best screen is a good developmental history, and second best is teacher observation. In any case, the screening should consist of looking for indicators or "flags" to identify preschoolers who are high risk children. Among the indicators mentioned were visual-motor coordination problems, visual-auditory problems, gross and fine motor problems, and problems with speech and language development. Other indicators mentioned, although less frequently than those mentioned above, were inconsistent performance across areas or from day-to-day and deviation from the peer group.

Finally, one person said simply that it might be a good idea to pick (presumably from observation) children who seem to have problems and assess them, using the more sophisticated and detailed instruments.

In summary, it was difficult to pin down much of real substance from the members of the group interviewed regarding the best practices for early screening of children for learning disabilities. The problems stem partly from the lack of clarity regarding exactly what constitutes a learning disability, and partly from the seeming incongruity between the idea and goals of early preschool screening on the one hand and a condition which is consistently defined as a deviation from expected performance on school-related tasks.

Visual-Related Problems of Learning Disabled Children

If it was difficult to find something of substance regarding best

practices in early screening of children for learning disabilities, it was doubly difficult to determine best practices in screening for vision-related problems of learning disabled children. A number of interviewees simply did not feel qualified to venture even an opinion on the subject or stated frankly that they did not think there was any direct relationship between learning disabilities and vision.

The responses which were received may be characterized as descriptions of areas to be considered, rather than specific practices or procedures. Those who responded suggested three areas to consider in screening for vision-related problems of learning disabled children:

1. The sensory area [of vision]
2. The functional area [muscles]
3. Visual-perception [which is said to be language based, and closely related to learning]

Activities mentioned in connection with the last category above are copying tests, including copying forms from examples placed before the child and visually changing planes while copying (that is, copying figures on paper from examples on a chalkboard).

Summary

Responses in the interviews were most complete when the topic was early screening for possible visual impairment, and several useful suggestions were received. The professionals who chose to respond to questions on the subject of learning disabilities were somewhat less specific and practical, although the idea of identification of high risk children through the use of developmental history data and direct observation was prominent; if high risk children could be "flagged" by this procedure, it was felt that there might be some hope of providing appropriate intervention should it be deemed necessary. While

there were a few responses to the questions regarding vision-related problems of learning disabilities, these were rather too general to be used as guides to the development of practices in screening.

VIII. CONCLUSIONS AND RECOMMENDATIONS

Conclusions: Vision Screening

Except for distance visual acuity screening, there is little consistency in vision screening practices in Virginia's public schools. Some school divisions check for near vision acuity and some do not; some check for muscle balance problems and some do not; some screen all children every year, while others screen each child upon his/her entry into the system, and as infrequently as every three or four years thereafter.

Although the data are not clear, it is assumed that when some deviation from annual screening for all children is present, it is probably due to a lack of trained personnel, or possible a lack of sufficient equipment. Greater frequency of screening, as well as more comprehensive screening, could be carried out if a broader representation of personnel were involved. School nurses and physical education teachers carry the bulk of the responsibility in most school divisions.

At the present time there is little or no evidence that educationally significant vision problems are being missed by the schools. However, in many school divisions regular mass screening for certain potentially serious, albeit somewhat uncommon, problems (e.g., reduced near vision acuity or muscle imbalance) is not presently being carried out, so it is difficult to determine if there are such problems which are not being identified.

Because of the inconsistency of vision screening practices among Virginia's school divisions, evaluation of "Virginia's school vision-screening program" is not possible, except to state that there is no consistent and coordinated state program for vision screening as such.

Conclusions: Early Detection of Learning Disabilities

The area of learning disabilities is one concerning a wide range of characteristics, rather than a single, easily identifiable condition. This is a heterogeneous group of youngsters possessing only a few characteristics in common: a) presumed central nervous system origin, b) an ability-performance discrepancy, and c) manifestations of the condition which are unique to the learning process of the individual. Nationwide, no clear agreement exists on criteria for determining the degree of discrepancy, except that it is related to academic performance; there is also no generally accepted description of the type, degree, or location of central nervous system involvement.

There is still wide disagreement regarding the definition of the condition itself, with at least three major national entities each espousing and promoting its own definition or interpretation of the federal definition, which is used for legal purposes. The terms dyslexia and dysgraphia, representing just two of the many specific conditions included on the long list of conditions which are considered to be a part of learning disabilities, are presently in use by only some of the professionals engaged in the study and treatment of learning disabilities.

Because learning disabilities are defined by the federal and Virginia state regulations in terms of a deviation from the performance level expected on school-related tasks, its positive identification before a child enters school is technically impossible. Furthermore, elaborate, lengthy, and expensive procedures for identification of learning disabilities do not seem to increase the quality or precision of assessment or treatment.

The rather general category, "High Risk" [for academic failure], does seem to have some value as a means of designating those pre-school children who are likely to encounter academic or behavioral difficulties in the primary

grades. A number of indicators, many of which are present at or before birth, appear to be useful for identification of these High Risk youngsters, who may then benefit when provided with appropriate special monitoring or instruction in some of the basic academic and behavior skills necessary for adequate performance in the early school years. Some of these youngsters may, in fact, prove in time to be learning disabled.

Conclusions: Vision-Related Problems of Learning Disabled Children

Review of the literature, interviews with professionals, and consultation with the HJR 127 Advisory Committee have failed to indicate answers to the questions surrounding identification of vision-related problems of learning disabilities. The body of research now available fails to reveal any causal relationship between vision and learning disabilities, however it is defined by those professional groups which are concerned with the problem. This suggests some of the difficulty faced in dealing with such problems on a statewide policy basis. There are several studies which have demonstrated efficacy of orthoptic exercises in the treatment of eye movement problems, but none of these found the treatment to have any beneficial effect on reading or other academic performance.

Recommendations: Vision Screening

1. It is recommended that state guidelines be developed to clarify Virginia regulations concerning vision screening in the public schools. This program should have the following characteristics:

   a. It should specify a periodic screening schedule for all children participating in the Child Find program as well as those in kindergarten through grade 12.
   b. It should screen for both distance and near visual acuity.
   c. It should screen for both latent and manifest muscle balance problems.
   d. It should screen for hyperopia (far-sightedness).
   e. The screening procedures used should have acceptable reliability.

2. A standard set of procedures should be adopted for administration of the program, including report forms, instruments to be used, and standard criteria and procedures for referral and follow-up.

3. A program should be developed and carried out for the recruitment and training of personnel to do the initial screening and referral. Examples of the types of personnel who might be involved are teacher aides, parent volunteers, and service club members.

4. The Virginia Department of Education should collect data on the vision screening program, including the number and types of conditions referred for examination, the number requiring treatment, the types of treatment, and the number of false positives (children referred but found upon clinical examination not to require treatment). The data could then be used in evaluation and any needed modification of the program.

5. The following evaluation standards should be kept in mind when the program is designed:

a. The program should be cost-effective in both time and money.

b. There should be a clear definition of areas and skills being screened, and the referral criteria should be clear and unambiguous (see page 3).

c. The program should be capable of being administered by persons with at least a minimum of training.

d. It should be clarified that screening does not constitute a complete or definitive examination which must be done by eye care professionals. It should identify, with a reasonable degree of consistency, those children who are likely to have a vision problem which would require the attention of a vision-care professional.

Recommendations: Early Detection of Learning Disabilities

Because of the mixed findings in the literature regarding early detection of learning disabilities, and the current lack of agreement on a clear-cut definition of the condition, it seems inappropriate to recommend any specific screening procedure for the early identification of learning disabilities. It is assumed that state special education regulations, in accordance with the State Education Code and P.L. 94-142, as well as state guidelines, will continue to provide the basis for identification of school-age children with learning disabilities, along with those having other handicapping conditions. A screening procedure aiming to detect one specific handicapping condition would be impossible under present regulations, since it would presume a predetermined diagnosis.

It is strongly recommended that attention be given to early identification of pre-school children who are high risk for academic failure. In this regard, the Virginia Department of Education should consider development of a plan to gather data on those prenatal and perinatal variables which have been found to be associated with high risk for academic failure, and to follow closely those children who are identified as likely to have difficulty when they reach school. The information should be easily and relatively inexpensively gathered through the assistance and cooperation of school social workers, school and public health nurses, and parents.

Recommendations: Vision-Related Problems of Learning Disabled Children

The research findings related to vision-related problems of learning disabled children are so varied and so equivocal that no definitive recommendations can be made at this time.

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APPENDICES

APPENDIX A

HOUSE JOINT RESOLUTION 127

GENERAL ASSEMBLY OF VIRGINIA -- 1984 SESSION

HOUSE JOINT RESOLUTION NO. 127

REPRIN.

Requesting the Department of Education to study and evaluate Virginia's school vision screening program as well as methods available for effective early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia.

Agreed to by the House of Delegates, March 8, 1984
Agreed to by the Senate, March 6, 1984

WHEREAS, Virginia, in compliance with Public Law 94-142, aspires to assist handicapped children in reaching their highest level of achievement in school; and

WHEREAS, the achievement of school children depends in part on their ability to understand what is seen and to use visual skills effectively; and

WHEREAS, four out of ten grade school children in the United States have vision problems inhibiting school achievement; and

WHEREAS, studies have concluded that children incarcerated in correctional facilities often have learning disabilities; and

WHEREAS, correcting these vision-related problems may reduce juvenile deliquency, as well as enhance the child's learning ability; and

WHEREAS, vision screenings in Virginia schools often fail to detect vision problems and are often limited to testing of distance acuity; and

WHEREAS, symptoms of learning disabilities such as dyslexia and dysgraphia cannot be detected by vision screenings, but can only be detected after the child is being taught to read; and

WHEREAS, it is estimated that at least ten percent of the population has some degree of dyslexia, a neurological impairment of the ability to comprehend written language; and

WHEREAS, a related neurological disorder is dysgraphia, an impairment of the ability to write properly; and

WHEREAS, early detection of health care problems and disorders leads to cost effective preventive health care and educational remediation; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Education is requested to study and evaluate Virginia's school vision screening program as well as methods available for effective early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia.

The Department should consider the vision-related problems of school children with particular emphasis on:

1. Evaluating Virginia's school vision-screening program;

2. The possible requirement of comprehension vision examinations with emphasis on sensory evaluations for all school children in the Commonwealth; and

3. Methods for early detection and treatment of vision-related problems of learning disabled children.

The Department should coordinate its work with the Virginia Department for the Visually Handicapped, Virginia Association of Children with Learning Disabilities, the Virginia Optometric Association, the Virginia Psychological Association, the Virginia Education Association, and the Medical Society of Virginia.

The Department should complete its work in time to submit its report to the General Assembly of Virginia prior to the 1986 Session.

APPENDIX B

HJR 127 ADVISORY COMMITTEE

ADVISORY COMMITTEE - HJR 127
VISUAL SCREENING/EARLY DETECTION OF LEARNING DISABILITIES
VIRGINIA DEPARTMENT OF EDUCATION

Committee Member	Representing
Dr. Lee H. Albright, Optometrist Richmond, Virginia	Virginia Optometric Association
Mrs. Kathleen R. Bishop L. D. Teacher Montgomery County Public Schools	Virginia Association for Children and Adults with Learning Disabilities and Local School Divisions
Mrs. Marolyn C. Carter School Nurse Salem City Public Schools	School Nurses and Local School Divisions
Dr. Patricia Duncan Professor of Teacher Education Virginia Commonwealth University	Virginia State Reading Association
Dr. Thomas Frey, Ophthalmologist Falls Church, Virginia	Virginia Medical Society and Virginia Society of Ophthalmology
Dr. Susan Kane Elementary LD Specialist Fairfax County Public Schools	Local School Divisions
Ms. Margit Maynard Speech Pathologist Virginia Beach Public Schools	Virginia Education Association and Local School Divisions
Dr. Paula McCormick Elementary Program Specialist for LD/MMR Fairfax County Public Schools	Virginia Council of Administrators of Special Education and Local School Divisions
Mr. Roland Pitts, Program Director Virginia Affiliate National Society to Prevent Blindness	National Society to Prevent Blindness, Virginia Affiliate

Committee Member	Representing
Dr. Ronald E. Reeve Associate Professor University of Virginia	Virginia Psychological Association
Dr. Carol J. Sears Professor George Mason University	State Special Education Advisory Committee
Mrs. Lillian A. Shearin Director of Special Education Virginia Department of Correctional Education	Virginia Department of Correctional Education
Mr. Glen Slonneger, Director Education Services Program Virginia Department for the Visually Handicapped	Virginia Department for the Visually Handicapped
Dr. Gerald Wallace, Associate Professor Department of Special Education University of Virginia	Institutions of Higher Education
Mrs. Barbara Ann Whitwell, Principal The Achievement Center Roanoke, Virginia	Virginia Orton Dyslexia Society

Ex Officio

Mr. Leslie W. Jones Associate Director Programs for the Handicapped Division of Special Education Programs and Pupil Personnel Services Virginia Department of Education	Virginia Department of Education
Mrs. Mary Louise Trusdell, Supervisor Programs for the Learning Disabled Division of Special Education Programs and Pupil Personnel Services Virginia Department of Education	Virginia Department of Education

Consultant

Dr. Don L. Walker
Associate Professor
Special Education Department
University of Virginia

APPENDIX C

SUPERINTENDENT'S MEMO NO. 60

AND

CURRENT PRACTICES SURVEY INSTRUMENTS

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF EDUCATION
P.O. BOX 6Q
RICHMOND, VIRGINIA 23216

SUPTS. MEMO. NO. 60
May 22, 1985

Administrative

TO: Division Superintendents

FROM: S. John Davis, Superintendent of Public Instruction

William H. Cochran, Deputy Superintendent of Public Instruction

SUBJECT: House Joint Resolution #127

The 1984 session of the General Assembly passed the above referenced Resolution (see attached), requesting the Department of Education to study and evaluate Virginia school divisions' vision screening programs as well as methods available for effective early detection of learning disabilities consistent with the symptoms of dyslexia and dysgraphia. In response to this request, the Department of Education has undertaken the activities which follow to result in a written report for the 1986 session of the General Assembly. This report must be completed for review and approval by proper authorities by September 1, 1985.

1. The appointment of an advisory committee with representation from the Virginia Department for the Visually Handicapped, Virginia Association for Children and Adults with Learning Disabilities, Virginia Optometric Association, Virginia Psychological Association, Virginia State Reading Association, Virginia Education Association, Medical Society of Virginia, the Virginia Affiliate of the National Society to Prevent Blindness, Virginia Ophthalmology Society, the State Special Education Advisory Committee, Virginia Council of Administrators in Special Education, the Virginia Orton Dyslexia Society, Institutions of Higher Education, the Rehabilitative School Authority, and School Nurses, as well as Local School Divisions.

2. The identification of relevant information (research and literature review) pertaining to this resolution.

3. The collection of information pertinent to this resolution, using survey instruments and interview techniques.

4. An analysis and subsequent generation of a report, which will be based on the literature review, the results of the analysis of the data, and the advice of the Advisory Committee. It is possible that this report may also include recommendations for local school divisions' screening procedures and policies concerning the early identification of learning disabled students in Virginia.

It is with regard to the third activity, namely the collection of information, that we are contacting you. Enclosed you will find three survey instruments which need to be completed and forwarded to us by June 14, 1985. We realize that your staff schedules are particularly busy at this time of year; however, this information is necessary in order that we may complete the charge given to us by the General Assembly.

Please note that each survey covers a unique and separate part of the Resolution. This approach--the use of three separate surveys--is necessary if we are to make a clear and discernible analysis of each issue. Please have the surveys completed and forwarded to Leslie W. Jones, Associate Director for Special Education Programs, P.O. Box 6Q, Richmond, Virginia 23216.

Should you have any questions regarding this matter, feel free to contact Mr. Jones at (804) 225-2873 or Mary Louise Trusdell, Supervisor of Programs for the Learning Disabled, at (804) 225-2880.

SDJ/WHC/pss

Enclosures

VIRGINIA DEPARTMENT OF EDUCATION
RICHMOND, VIRGINIA

INSTRUCTIONS

This information is needed for a clear and accurate determination of certain screening* practices in Virginia, as requested by the Virginia General Assembly.

Please answer each question as accurately as you can. Feel free to expand upon your answer if you feel that accuracy or validity requires it. The completed form is to be returned, along with the other two which accompanied it, by the local Supervisor/Director of Special Education to Leslie W. Jones, Associate Director for Special Education Programs, P. O. Box 6-Q, Richmond, Virginia 23216.

*Definition of screening:

> Screening is defined here as: the use of quick, simple procedures to identify and separate persons who have a problem, or are at risk of having a problem, from those who probably do not have a problem.

Virginia Department of Education
Division of Special Education Programs and Pupil Personnel Services
Spring, 1985

Survey of Practices for
EARLY DETECTION AND TREATMENT OF VISUAL-RELATED PROBLEMS OF LD CHILDREN

1. Does your school division carry out any systematic screening for the early detection and treatment of **visual-related** problems of learning disabled children? _____ Yes _____ No

   If yes, does this identification specifically consider the symptoms of:

   dyslexia _____ Yes _____ No

   dysgraphia _____ Yes _____ No

   ° IF YOU HAVE ANSWERED YES TO QUESTION 1, PLEASE CONTINUE WITH THE FOLLOWING QUESTIONS.

   ° IF YOU HAVE ANSWERED NO TO QUESTION 1, PLEASE TURN TO QUESTION #13.

2. Name and briefly describe the procedures or instruments which your school division uses for this screening, indicating the time in the academic year that the screening is done. (Please give names of instruments.)

3. What grades are screened? (Circle all that are screened each year)

   Grades: K 1 2 3 4 ____ ____ ____

4. Who normally does this screening in your school division? (Check all that apply)

   _____ Special education teacher(s)
   _____ Regular classroom teacher(s)
   _____ School nurse
   _____ Parents or other volunteers
   _____ Other (Please identify position) _____

   _____

5. Is any special training given the personnel who do the screening? _____ Yes _____ No If yes, please describe.

6. What criteria are used for determining that a child who has been screened should be referred for treatment?

7. Who normally gives the prescribed treatment?

8. Please list or describe briefly the treatment(s) delivered.

9. Are reports from the person giving the treatment provided regularly to the school? _____ Yes _____ No

   Comments:

10. What percentage of those LD children initially screened each year for visual related problems are found to need treatment? _____

11. In your opinion, how adequate is your school division's screening program for the early detection and treatment of visual-related problems of LD children?

    _____ Very adequate
    _____ Adequate
    _____ Barely adequate
    _____ Grossly inadequate

12. In your opinion, what improvements in this screening program are most needed? (Use back of this sheet if necessary)

13. Please check the total student population range in your school division:

_____ 1 - 4,999
_____ 5,000 - 9,999
_____ 10,000 - 29,999
_____ 30,000 and over

14. Your Superintendent's Regional Study Group number (see p. 15, Virginia Educational Directory, 1984-85) is _____

15. Position of the person preparing this report:

_____

16. School division: _____

Telephone number: (____) _____

17. OPTIONAL:

Name of person preparing this survey:

_____

Virginia Department of Education
Division of Special Education Programs and Pupil Personnel Services
Spring, 1985

Survey of VISION SCREENING Practices in Virginia

1. What levels are presently covered in your regular vision screening program? (Circle all that are screened each year)

   Child Find -- Preschool Handicapped -- Kindergarten

   Grades: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12

   Comments:

2. Who normally does the vision screening in your school division? (Check all that apply)

   _____ School Nurse(s)
   _____ Public Health Nurse(s)
   _____ Physical Education Teacher(s)
   _____ Regular Classroom Teacher(s)
   _____ Teacher Aide(s)
   _____ Trained Technicians
   _____ Parents or Other Volunteers
   _____ Local Optometrist(s)
   _____ Local Ophthalmologist(s)
   _____ Other (Please Specify) _____

3. Briefly describe the special training (if any) which is given the personnel who do the screening.

4. What screening process, test, procedure or equipment is used in the screening program? (Check all that are used)

   _____ Snellen chart at distance
   _____ Snellen chart at distance with plus lens test
   _____ Massachusetts Vision Test
   _____ Titmus Vision Tester
   _____ Keystone Telebinocular
   _____ Modified Clinical Technique
   _____ Other (Please describe) _____

   _____

5. Are children in your school division screened for:
(Check all that are applicable)

_____ Near point visual acuity
_____ Strabismus (Crossed eyes or eyes that turn in different directions)
_____ Fusion, muscle balance, or other eye movement problems

6. Please describe the criteria used for referral of children for further vision testing.

7. Are children who fail the first screening rescreened before referral to an eye specialist for examination? _____ If so, who does the second screening?

8. Briefly describe the procedure followed for the child who is to be referred to an eye specialist for examination.

9. Are reports from the examining eye specialist routinely sent to the school?

_____ Yes _____ No

Comments:

10. What procedure is followed to be sure that a child who has been referred for an eye examination actually receives it?

11. What follow-up measures are used for the child who <u>has been evaluated</u> by an eye specialist?

12. What percentage of those children initially screened each year are found to need examination, care or treatment by an eye specialist?

13. In your opinion, how adequate is the vision screening program in use in your school division? (check one)

_____ Very adequate
_____ Adequate
_____ Barely adequate
_____ Very inadequate

14. In your opinion, what improvements in your vision screening program are most needed? (Use the back of this sheet if necessary)

15. Please check the total student population range in your school division:

_____ 1 - 4,999
_____ 5,000 - 9,999
_____ 10,000 - 29,999
_____ 30,000 and over

16. Your Superintendent's Region Study Group number (see p. 15, Virginia Educational Directory, 1984-85 is _____

17. Position of the person preparing this report is:

_____

18. School division: _____

Telephone number (____) _____.

19. OPTIONAL:

Name of person preparing this survey:

_____

Virginia Department of Education
Division of Special Education Programs and Pupil Personnel Services
Spring, 1985

Survey of Practices for EARLY SCREENING FOR LEARNING DISABILITIES

1. Does your school division carry out any systematic screening for the **early detection** of learning disabilities (L.D.)? _____ Yes _____ No

   If yes, does this identification specifically consider the symptons of:

   dyslexia _____ Yes _____ No

   dysgraphia _____ Yes _____ No

   ° IF YOU HAVE ANSWERED YES TO QUESTION 1, PLEASE CONTINUE WITH THE FOLLOWING QUESTIONS.

   ° IF YOU HAVE ANSWERED NO TO BOTH OF THE ABOVE, PLEASE TURN TO QUESTION #11.

2. Name and briefly describe the procedures or instruments which are used for this screening, including the time in the academic year that the screening is done. (Please give names of instruments.)

3. What age groups are screened? (Circle all that are screened each year)

   Chronological Ages: 1 2 3 4 5 6 7

   Other? _____

   Comments:

4. Who normally does this screening in your school division? (Check all that apply)

_____ Regular classroom teacher(s)
_____ Special education teacher(s)
_____ School psychologist
_____ Other (Please identify position) _____

_____

5. Is any special training given the personnel who do the screening? _____ Yes _____ No If yes, please describe.

6. Are children who fail the first screening rescreened before referral to the Child Study Committee? _____ Yes _____ No If yes, who does the re-screening (identify position)? _____

What procedures are followed for the rescreening?

7. Please describe the criteria used in deciding that a child should be referred for further evaluation after the rescreening.

8. Approximately what proportion of those children initially screened each year for the early detection of learning disabilities are later found to need special education? _____.

9. In your opinion, how adequate is the early screening program for LD in your school division?

_____ Very adequate
_____ Adequate
_____ Barely adequate
_____ Grossly inadequate

10. In your opinion, what improvements in this screening program are most needed? (Use back of this sheet if necessary)

11. Please check the total student population range in your school division:

_____ 1 - 4,999
_____ 5,000 - 9,999
_____ 10,000 - 29,999
_____ 30,000 and over

12. Your Superintendent's Regional Study Group number (see p. 15, Virginia Educational Directory, 1984-85) is _____

13. Position of the person preparing this report:

_____

14. School division: _____

Telephone number: (____) _____

15. OPTIONAL:

Name of person preparing this survey:

_____

APPENDIX D

"BEST PRACTICES" INTERVIEWEES

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Ms. Bonnie Billingsley, LD Coordinator
Roanoke City Public Schools
Roanoke, Virginia

Dr. Beatrice Cameron, Assistant Superintendent
Fairfax County Public Schools
Fairfax, Virginia

Ms. Cynthia Cleveland
Charlottesville Center for Dyslexia
Charlottesville, Virginia

Marvin Efron, O. D., Ph.D.
Columbia, South Carolina

Dr. Rachel Goodman, Psychologist
Roanoke, Virginia

Mrs. Julia Ann Greenwood, Director
The New Community School
Richmond, Virginia

Meena Hazra, M. D.
Medical College of Virginia and
Bon Air Correctional Center
Richmond, Virginia

Susan Kershman, Ph.D.
Pennsylvania College of Optometry
Philadelphia, Pennsylvania

Ms. Janice Maddex, LD Coordinator
Roanoke County Public Schools
Roanoke, Virginia

John F. O'Neill, M. D.
Georgetown University Medical
Center
Washington, D. C.

Mrs. Rebecca Richardson, Director
Charlottesville Center for
Dyslexia
Charlottesville, Virginia

Dr. Clay Sande, Preschool
Coordinator
Fairfax County Public Schools
Fairfax, Virginia

James Sprague, M. D.
McLean, Virginia

Joel Zaba, O. D.
Norfolk, Virginia

APPENDIX E

"BEST PRACTICES" INTERVIEW PROTOCOL

"BEST PRACTICES" INTERVIEW PROTOCOL

The definition of screening to be used here is "the use of quick, simple procedures to identify and separate persons who have a problem from those who probably don't have a problem." Please try to keep this in mind as you answer my questions.

Also, feel free to expand upon your answer if you feel that accuracy or validity requires it.

I will be asking questions about three different areas of concern. These are:

1. Vision screening
2. Early detection of children with learning disabilities
3. Identification of children with vision-related learning disabilities

Vision Screening

1. What is the earliest age at which you think it would be desirable and necessary for vision screening to be carried out?

2. What information about the child's vision should be sought in vision screening?

3. What procedures, materials and equipment should be used?

4. How frequently should it be repeated?

When	Equipment, etc	By Whom?
a.	a.	a.
b.	b.	b.
c.	c.	c.
d.	d.	d.
e.	e.	e.
f.	f.	f.

5. What criteria should be used?

6. Do you have additional comments, suggestions or strong feelings regarding vision screening that you wish recorded?

1. Specifically, what information about the child's functioning should be sought in screening for LD?

2. How early should children be screened for LD?

3. How frequently should it be repeated?

Interval	Procedures	By Whom?

4. What criteria should be used for referral?

5. Do you have strong feelings or suggestions about early identification of children with learning disabilities that you wish to have recorded?

1. Specifically, what information about the child's performance should be sought in screening for vision-related LD?

2. How early should children be screened for vision-related learning disabilities?

3. How frequently should it be repeated?

Interval	Procedures	By Whom?

4. What criteria should be used for referral?

5. Do you have strong feelings or suggestions about identification of children's vision-related learning disabilities that you wish to have recorded?

APPENDIX F

VIRGINIA REGULATIONS REGARDING VISION SCREENING

VIRGINIA REGULATIONS REGARDING VISION SCREENING

[The following is from Regulations Governing Special Education Programs for Handicapped Children and Youth in Virginia, published by the Commonwealth of Virginia, Department of Education, Office of Special and Compensatory Education, September 1984.]

* * *

4. Screening

a) Each local school division shall establish and maintain screening procedures to assure the identification of handicapped persons requiring special education residing within its jurisdiction. All procedural safeguards shall be maintained during the screening process. These include the following: I. 22.1-215

(1) Written notice;

(2) Confidentiality; and

(3) Maintenance of student's scholastic record.

b) The screening process for all children enrolled in the school division is as follows:

(1) All children, within 60 administrative working days of initial enrollment in a public school, shall be screened in the following areas to determine if formal assessment is indicated:

(a) Speech, voice, and language;

(b) Fine and gross motor functions; and

(c) Vision and hearing. I. 22.1-273

(2) Specific measures or instruments

will be employed which use:

(a) Both observational and performance techniques; and

(b) Techniques which guarantee non-discrimination.

APPENDIX G

TESTS, BATTERIES, SCREENING PROGRAMS, AND PROCEDURES BEING USED IN VIRGINIA PUBLIC SCHOOLS FOR EARLY DETECTION OF LEARNING DISABILITIES

TESTS, BATTERIES, SCREENING PROGRAMS, AND PROCEDURES BEING USED IN VIRGINIA PUBLIC SCHOOLS FOR EARLY DETECTION OF LEARNING DISABILITIES

- Drawing of circle, horizontal and vertical lines, and the human figure
- Developmental indicators
- Gesell
- Checklist
- Learning Accomplishment Profile (LAP)
- Titmus Vision Tester
- Snellen Chart
- Denver Developmental Screening Test
- Developmental Indicators for the Assessment of Learning (DIAL)
- McCarthy Scales
- Metropolitan Readiness Test
- Kindergarten Screening Inventory
- Santa Clara Program
- Atlantic City Screening Battery
- Keystone Peek-a-Boo
- Norton Screening Checklist
- "Vision Assessment"
- Yellow Brick Road
- Wechsler Intelligence Scale for Children - Revised
- Bender-Gestalt
- King Battery of Tests
- Keystone Telebinocular
- Informal Speech Inventory*
- Informal Language Inventory*
- Vision, Hearing, Fine and Gross Motor Skills*
- Brigance
- Cognitive Skills Assessment Battery (CSAB)

* These are all used by the same school division, apparently as a battery.