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Suggested Methods of Evaluating and Modifying Visual Perceptual Deficiencies as Related to Reading Disorders in Early Elementary Grades

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SUGGESTED METHODS OF EVALUATING AND MODIFYING
VISUAL PERCEPTUAL DEFICIENCIES AS
RELATED TO READING DISORDERS IN EARLY ELEMENTARY GRADES

by

Kenneth E. Sturm

A Project Report
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of the
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## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I THE DEVELOPMENT OF A CONCEPT</td>
<td>2</td>
</tr>
<tr>
<td>II VISUAL PERCEPTION AND READING ACHIEVEMENT</td>
<td>17</td>
</tr>
<tr>
<td>Perceptual Exploration</td>
<td>17</td>
</tr>
<tr>
<td>Perceptual Schematization</td>
<td>20</td>
</tr>
<tr>
<td>Perceptual Reorganization</td>
<td>21</td>
</tr>
<tr>
<td>III EVALUATING VISUAL PERCEPTUAL PROBLEMS</td>
<td>23</td>
</tr>
<tr>
<td>IV FIRST GRADE PERCEPTUAL READINESS PROGRAM</td>
<td>28</td>
</tr>
<tr>
<td>Generalizations Concerning the Learning Activities of children having Visual Perceptual Difficulties</td>
<td>30</td>
</tr>
<tr>
<td>Points to Consider When Planning Activities for Children Having Visual Perceptual Difficulties</td>
<td>31</td>
</tr>
<tr>
<td>Suggested Activities</td>
<td>32</td>
</tr>
<tr>
<td>Time Schedule</td>
<td>35</td>
</tr>
<tr>
<td>Summary and Concluding Comment</td>
<td>37</td>
</tr>
</tbody>
</table>
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Kenneth E. Sturm
INTRODUCTION

Most educators are aware of the fact that there are many children in our schools today that are not achieving as well as they should in the area of reading. Such children often begin school with interest and enthusiasm but gradually become behavior problems or simply "vegetate" in the classroom. This is often accompanied by other symptomatology such as hyperactivity, and poor coordination. Perhaps the most controversial theories to explain this phenomenon have been in the area of visual perception.

"Reading disability" is a term that has been used in referring to a reading problem in which perceptual skills supposedly play an important role. A reading handicap usually involves a variety of "learning flaws". Such factors as memory, auditory perception, and other cognitive functions should be considered in viewing the total reading disability. However, for the purposes of this study only visual perception will be examined.

This writer has organized the material into three major parts: Chapter I describes and summarizes how the concept of a reading disability was developed; in Chapter II the role of visual perception is discussed in more detail as it relates to reading, and Chapters III and IV attempt to formulate a model by which the classroom teacher might recognize and treat a visual perceptual handicap within the reading program.
THE DEVELOPMENT OF A CONCEPT

In exploring the literature pertaining to reading disabilities one cannot help but to be awed at the proliferation of terminology in this area. Attempts have been made to arrive at some consensus (Cruickshank, 1966), but finding a single term which is acceptable to professional people of different disciplines appears to be "logically impossible". Furthermore, such variation in emphasis has not facilitated communication between professionals but has had the effect of fragmenting this population into interest groups. This appears to have been, and still is, a serious problem to a combined multidisciplinarian approach to effectively handling the problem of a reading disability.

It is difficult to determine exactly when the first formal reference was made to a "reading disability". Some of the earliest references were made by English ophthalmologists near the end of the nineteenth century. Morgan, in 1896, described the case of a fourteen year old boy who had not learned to read after seven years in school. His schoolmaster stated that he would have been the smartest student in the school if all instruction were oral. He concluded that the boy's difficulty was evidently neurological in nature and probably due to defective development of a section of the brain known as the angular gyrus. When this portion of the brain was damaged
in adults it produced almost identical symptoms.

This paper initiated a series of reports on the subject, several of which, were written by Kerr. He elaborated on the nature of the problem and pointed out that a reading disability does not coincide with lack of intelligence. Kerr also stated that he felt the problem was neurologically based (Kerr, 1897).

Two more cases were presented by Hinshelwood in 1900, both of which were boys of apparently normal intelligence. Hinshelwood did not see these cases as presenting an unique problem but rather as representing a heretofor unrecognized reading disability syndrome.

Fisher (1905) was the first to note a familial influence. This report was followed by a number of other studies supporting an hereditary etiology. Up to this point a reading disability was considered to be a fairly well defined area of abnormal behavior. However, the number of studies on this topic was mushrooming and many other factors were being introduced. Such areas of difficulty as auditory discrimination, and expressive speech were correlated with the problem and resulted in such terms as "specific language defect" (Witmer, 1913). Also, Hinshelwood (1917) stated that a number of cases may occur in the same family and that males with the problem are more frequently discovered than females.

This broadening of the definition and description also led to further speculation as to what the causal factors were.
Although a reading disability was still considered to reflect a neurological disorder, such terms as "acquired," and "learned," were beginning to show up in the literature. Witmer (1907) gave two possible explanations; he stated that a reading disability might be caused by faulty vision at an early age or that some brains might be congenitally incapable of developing the normal visual functions of language.

Of the theories supporting a congenital defect there seemed to be a trend to drift away from the idea of a very localized pathological condition to a more diffuse disorder such as a "symmetrical defect on both sides of the brain," or "lack of dominance by the left side of the brain" (Whepham, 1916).

Following the studies published up to 1917, a number of American psychologists made some significant contributions in the study of reading disabilities. Bronner was one of the first investigators to use the new intelligence tests and make a separate diagnosis for each case. She found an individual deficient in auditory memory, another deficient in visual memory and a third with mixed problems. However, Bronner did agree with the concept that sometimes there does exist a special defect or disability in reading and she was one of the first workers to investigate the possibility of a significant association between reading disability and perceptual defects (Bronner, 1917).
Schmitt was one of the first psychologists to stress the need for a differential diagnosis in working with a reading problem. Such factors as "foreign language in the home, dislike of school, abnormal unresponsiveness to school or other social situations, etc.,"\(^1\) had to be evaluated before the question of cause could be answered. Furthermore, Schmitt rejected the theory of brain lesion and stated the problem was a learned disorder.

Wallin voiced some serious criticism towards the work presented up to this time. He notes, "this writer is not aware that any neurologist has ever subjected the angular gyrus of congenitally word-blind children to a thorough histological post-mortem examination."\(^2\) He stated that the differences in reading disabilities are differences in degree and not in kind as was previously thought.

Wallin also believed that the incidence of word-blindness was higher than generally believed. In a study of 2116 school cases he found 4.48 per cent of the children to be experiencing reading disability. This was greater than the combined incidence of epileptics, psychopaths, mongols, and cretins. He also noted that the ratio of boys to girls was about 4 to 1.


Beginning about 1920 the amount of information on the topic of reading disorders began to increase rapidly; to a point that it would be impossible to review all of the literature. The medical field seemed to be accepting a "congenital" model, whereas educators and psychologists tended to look at the "acquired" nature of the problem.

Orton published a series of important studies from 1925 to 1937 in which he presented an interesting genetic theory. He stated, "In skeleton then, my theory of the obstacle to the acquisition of reading in children of normal intelligence which results in the varying grades of reading disability is a failure to establish the physiological habit of working exclusively from the engrams of one hemisphere." He felt that strong cerebral dominance had not been established and so there was confusion in the selection of the correct memory trace. Orton also stated that dominance by the right hemisphere was determined by heredity as a recessive characteristic.

Castner (1935) reported some interesting findings from the Yale Clinic of Child Development. A number of preschool children studied at the clinic were later classified as disabled readers. Castner went back to the records of these children to see if there was any way to have predicted their

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present performance.

He found that they could not be discriminated on the basis of any single factor but that there did appear to be a cluster of traits which were often present. These were: scattering and inconsistency of the individual developmental examination; inconsistency of results on successive examinations, specific weakness on drawing tests; sinistrad or other atypical directional tendency in drawing, or tendency to reversal in making letters and numbers; the presence or history of sinistrality, total or partial, in the child or immediate family; a history of reading disability in siblings or parents; atypical factors in speech development; and unstable personality.

By the late 1930's a good deal of knowledge was available concerning a description of reading disability; it was recognized that no two children with a reading disability displayed identical symptomology, that form perception was often a problem, and that orientation difficulties were also present. However, the problem of etiology was still vague and no one theory seemed to fit the data available.

In 1943, Fernald made several contributions towards the description of reading disability. She made a number of observations and found that the problem was of a broader nature. "We found the subject in these cases had the same type of difficulty in all learning processes involving adjustments similar to those required in reading, as for example, learning
number combinations, dates, rules of any sort, geographical facts when formally presented, and foreign languages."\(^1\)

Fernald also criticized many of the previous theories and pointed out several flaws in Orton's theory. She noted that reversal errors, emphasized by Orton, occur in all children during the early stages of learning to read. She also mentioned that many children with mixed dominance do not have reading problems and that many that do, do not have difficulty in learning to read. Fernald hypothesized that such difficulties were a result of "certain variations in the integrated brain functioning involving the same region as that in which the lesion is found in acquired alexia."\(^2\) Her theory also placed some emphasis on visual imagery.

European studies appear to adhere quite closely to a medical model until the 1940's. This work progressed to a point that a national association for word-blindness was founded in Denmark in 1943. Out of this came some important studies on the genetics of specific language disability.

In 1942 Skydsgaard (Hallgren, 1950) obtained information regarding the relatives of 22 of the 26 children with specific dyslexia whom he had examined. He published five pedigree charts,

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\(^2\)loc. cit., p. 164.
covering three and four generations. In one of the families he found direct inheritance of specific dyslexia in four generations and direct inheritance in three generations in three of the families. The data also suggest that specific dyslexia skipped a generation in some cases. In the fifth family, specific dyslexia occurred in three generations, but direct inheritance could only be demonstrated in two.

In 1950, Hallgren published a book which remains the definitive work on the genetics of specific language disability. A variety of tests were administered as a means of evaluating the abilities of each child. Such tests as an oral reading test, hand and eye dominance tests, a dictation test, an oral spelling test, an intelligence tests, and other tests were given. In every case where the tests indicated reading and writing disabilities a history of developmental abnormalities was also a necessary criteria. In certain cases the diagnosis of dyslexia was made on the basis of the history alone. Therefore, this was considered the most important diagnostic criterion.

On the basis of clinical judgment and the tests mentioned above Hallgren selected a total of 106 subjects. Each of these children were diagnosed as having a reading disability. Upon investigation of their families he found one or both parents with similar disorders in 97 cases and some member of the family affected in 104 cases.
Hallgren found no significant difference between the selected group and a control group on a number of variables; illness, neurological disorders, visual defects, auditory defects, social status, broken homes, mixed hand and eye dominance, and left eyedness. However, a significant difference was found in terms of speech defects and those considered "problem children."

More recently, the number of studies in this area have multiplied considerably. Such names as Bender, Frostig, Rabinovitch, Kephart, and Cruickshank have become well-known to the public. These psychologists present new trends in the field of reading disability in that their emphasis has been on establishing a relationship between perceptual skills and reading achievement.

Bender's paper in 1950 reported that reading disabilities showed immature neurological patterns and immature electroencephalograms. On the Goodenough Draw a Person Test they showed poor motor control and immature visual perception as measured by the Bender Gestalt Test and Klapper Marble Board. Bender interpreted these results as indications of a developmental lag of the central nervous system.

DeHirsch (1952) reported that dyslexics show a history of delay in neuro-muscular development and have problems in fine muscle coordination. She also found lags in visual-
motor performance on the Bender Gestalt Test and found many cases demonstrating hyperactivity. She hypothesised that such children "have difficulty with structuralization and organization of Gestalten."

In 1956 Rabinovitch suggested that disabled readers could be diagnosed, to a large extent, on the basis of test scores on the Wechsler Intelligence Scale for Children. He found a great discrepancy between performance and verbal IQ scores with the performance measure being the highest. He also included such behaviors as right-left confusion and mixed hand-eye preferences in the "characteristic pattern". He interpreted these findings as suggesting a developmental brain disorder.

Bender reported more results in 1958 on dyslexic children. She stated, "Right-left confusion or lack of orientation is usually present and a specific feature. This may refer to the child's own right and left hands and sides of the body or be projected to other people. It may be more evident in memory than on direct observation. It may be projected into space and be associated with extensive difficulties with spatial

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and directional orientation."

Silver and Hagin published a report from the Bellevue Medical Center. They conclude, "In summary then, neurological and perceptual study of children with reading disability reveal the following syndrome: defects in right-left discrimination; a discrepancy between the writing hand and the elevated extremity on extension testing; "postural responses" which are immature and less organized than one would expect from the age and intelligence of the child; outstanding visual-motor immaturity and specific difficulty in spatial orientation as determined by angulation difficulty; marked difficulty in visual figure-background perception; frequent inability to grasp the temporal relationships of sounds; body image distortion with tonus and postural problems indicated; and only occasional difficulty with finger gnosis and tactile figure background perception. The electroencephalogram in the few cases in which it was done was dysrhythmic and suggestive of immaturity."  

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More recently Money edited an important book on a report of a conference held at Johns Hopkins in 1961. In this book Benton stated if, "one considers the younger and older children separately, the picture is clarified to a considerable degree. Inferior form perception, visual-motor skill and directional sense are associated with reading retardation in younger school children. However, as the investigations of Galifret-Granjon, Lachmann, and Harris have shown, this association either disappears or is greatly attenuated when older dyslexic children are studied. A tenable (but not necessarily correct) conclusion is that the importance of these factors as specific determinants of severe and persistent dyslexia in children of adequate intelligence has been rather exaggerated."¹

In conclusion, a tremendous amount of information has been gathered in the area of reading disabilities. Along with it has risen a number of serious questions. Perhaps the most disturbing question has been raised by Benton when he points out that such "symptoms" as visual-motor skill and directional sense may not necessarily be basic deficiencies to the problem of reading disorders. However, more and better controlled research is needed to substantiate such claims.

Other major issues have been in selecting an appropriate term to describe the problem, and in arriving at a decision as to the cause of the disorder.

To summarize then, a reading disability may be described as follows: the child presents a primary reading problem, and does poorly in spelling and writing; would appear to have average learning potential; may have a history of speech disorders as well as other developmental disorders; there are probably other members in his immediate family who have similar problems and the child is most apt to be a male; perceptual disturbances such as orientation disorders and form perception are likely to be significant factors; and the child may or may not exhibit a number of other symptoms.

With such a broad description of the problem it is not surprising that an equally broad number of terms have also arisen. Such terms as word-blindness, dyslexia, alexia, specific language disorder, reading disability, brain injury, minimal cerebral dysfunction, and many others have all been used in referring to reading disabilities involving visual perception.

Etiology has undoubtedly been the area in which the least amount of progress has been made. The concept of brain lesion has apparently been broadened and expanded into theories suggesting either a more diffuse form of brain injury, or a developmental disorder of the brain. The main distinction
here is how and when the damage occurred. However, most of the evidence for such theories has been based on inferences and not tangible evidence to support a "brain damage" theory (Strauss, 1947). As a result, some psychologists are now rejecting this type of etiological model and are focusing their attention towards those observable behaviors which are inappropriate or have not yet been learned. Educationally, this latter approach may well make a significant contribution.

And finally, mention should be made of the fruit of research, namely, application and treatment. Only within the past ten years has this area received much attention. Such people as Frostig and Kephart have created a growing demand for more and better information in treating the academic problems of children. Such programs have, for the most part, centered on the area of perceptual development. Although the value of these treatment programs has been generally accepted by educators, it should be emphasized that, to this writer's knowledge, no studies have conclusively shown that a particular treatment program has had any significant success in helping children to read more efficiently. Hopefully, in the near future, we will have more conclusive evidence to support perceptual training as an avenue towards improving reading achievement in children.
With this background the writer will now focus his attention more closely on the nature of visual perception especially as it relates to the development of reading skills.
VISUAL PERCEPTION AND READING ACHIEVEMENT

In reviewing the literature, especially the more recent materials, one factor has received a great deal of attention as being a fundamental handicap to effective reading achievement. This factor can be broadly labeled as visual perception. The following section is an attempt to describe and identify those aspects of visual perception which appear to be relevant to the attainment of effective reading skills. These perceptual areas are labeled as follows; perceptual exploration, perceptual schematization, and perceptual reorganization.

**Perceptual exploration** has probably received more attention than the other two areas combined. It might more accurately be labeled as a foundation level for the attainment of more refined visual perceptual skills. This area focuses upon the development of "muscle sense" or as it is more apt to be referred to, kinesthetic awareness, and its coordination with vision. The rationale most generally accepted for stressing the importance of this area is that "perceptual activities are, from a developmental standpoint, internalized actions. Such actions become internalized only after they have been mastered and perfected on the sensory motor plane."\(^1\)

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Difficulties often seem to arise in connecting kinesthetic information with the visual information, and appear to account for many of the difficulties children have in learning to read. Kephart is probably the individual most closely associated with this position. He considers learning to be based on several developmental skills each of which is necessary in order that a child learn efficiently. Kephart states that a child first learns to structure information through physical contact with his environment, and that such an orientation is essential to any further learning. This area would include such skills as laterality, directionality and body image.

Very briefly, laterality is described by Kephart as the child's ability "to distinguish between his left side and his right and to control the two sides of his body separately and simultaneously". This is important in activities such as drawing a square in which the child must locate a beginning point with reference to his own body. The child must also be aware of the type of movement which will bring him back to the starting point which involves directionality.

Directionality is based upon laterality and refers to the right and left-hand aspects of a visual stimulus.

Skill in this area enables the child to construct coordinates in space by projecting these directionalities from the organism out into space. Thus, when the child has determined the starting point for a square he is to copy, he must next determine the direction in which he must move to produce a line similar to the one in the copy.

A final area to be considered here is that of body image. A number of studies (Schilder, 1935, Bender, 1956, and others) have emphasized the importance of having a clear, accurate, and complete picture of his own body and its position in space. The rationale here is that all other relationships are organized in relationship to the body, which is the point of origin for all the spatial relationships among objects outside our body. The reader is referred to Kephart, *The Slow Learner in the Classroom* for a more detailed explanation of how these basic skills are related to learning.

With this viewpoint in mind, its application to reading presents a tremendous task for the first grade teacher. One has only to observe in a first grade program to realize that many children lack good physical control of their bodies and that these are usually the ones having the most difficulty in learning to read. If educators are to accept a theoretical basis for learning such as Kephart proposes, then it would also seem essential that a reading curriculum make provisions for diagnosing and treating such problems.
Perceptual schematization is another rather broad area in visual perception, which deals with part-whole relationships. Piaget (Elkind, 1967) describes it as a coordination of wholes and parts in such a way that both retain their unique identity without losing their interdependence. This feature is well illustrated in a study by Elkind, Loegler, and Go (1964) in which they made a man out of fruit. The head consisted of an apple, the body consisted of a pear, the legs were bananas and the arms were bunches of grapes. When this was shown to children of different ages, it was found that nursery school children saw only the parts, kindergarten and first grade children saw primarily the wholes and children of the second grade level and beyond saw both the parts and the wholes in an integrated fashion.

Frostig emphasizes two qualities of this visual perceptual process; form constancy and spatial relationships. Form constancy is the means by which a child learns to make generalizations of part-whole relationships, i.e. recognize basic shapes and figures. Spatial relationships would also fall within this category since it emphasizes the subject's ability to analyze a stimulus pattern in terms of the spatial relationships between the component parts. Frostig also seems to emphasize the importance of being able to transfer a pattern from one field to another.
The significance of this perceptual skill would seem to be crucial to a reading program. The mechanical as well as interpretive aspects of reading involve part-whole relationships. The arrangement of letter-parts, letters, and words can each be seen to have an affect on the total pattern and its meaning. Ultimately, effective reading must encompass some provisions for discriminating and dealing with minor changes in word patterns. This would also have implications relative to the selection of a method for teaching reading, i.e. an analytical vs. a gestalt approach to reading.

Perceptual reorganization is defined as a process of acting upon a given configuration so as to produce a new organization without corresponding modification of the stimuli. An example of this is the classic Reubin Vase-Profile in which one can see either two profiles or a vase without any change in the stimuli. Piaget suggests that this phenomenon is dependent upon the child's readiness to mentally detach the contour line from one area and reattach it to another. "For the young child the essential difficulty is the recognition that one and the same element can give rise to two different forms depending upon the context." An example of this may be apparent in the child who has just been introduced to a printed page.

Such a child must learn to attend to only the relevant stimulus clues. This would seem to be an essential reading skill.

Frostig discusses this topic in terms of a figure ground relationship. A child must be able to identify the essential elements of a pattern within the stimulus configuration, while at the same time reject or not attend to non-essential stimuli.

Another related area might be considered in phonics. A child is presented a visual pattern to which he must attach a given sound, depending on the visual context. This is a complicated process and probably one of the most difficult skills for the beginning reader to master.

At this stage in the development of this paper it is the intent of the writer to show how the information presented up to this point might be applied to an elementary school program. Chapter III is an elaboration of how the classroom teacher might evaluate the visual perceptual skills presented in Chapter II, whereas the final chapter is broader in terms of its application to the total school routine.
EVALUATING VISUAL PERCEPTUAL PROBLEMS

Accurate identification of a reading problem is essential to a good treatment program. Consequently, a teacher must know not only what to look for in the way of potential reading difficulties, but also how to look for them. It is this writer's contention that a teacher already possesses much of the skill and tools necessary to identify such problems. Innovation need not be as important a key as effective utilization of existing resources. Classroom observations, test results, and analysis of materials and tests which the teacher uses routinely are the foundation of the diagnostic program suggested in this paper.

At this point the writer wishes to clarify two rather important considerations dealing with standardization and "teacher-use" of this program. The proposed assessment technique is not intended to be a standardized method of diagnosing reading problems nor is it intended to be developed as one. Rather, it is designed as an informal inventory or assessment to be used with standardized measures in understanding and recognizing the progress of children in a reading program. Secondly, this program is not intended to provide the classroom teacher with a means of labeling or identifying children as being perceptually handicapped, perceptually immature, or whatever. Labeling is a dangerous and often impractical waste of time and should not be attempted by the regular
classroom teacher. Rather, the teacher's diagnostic efforts should be concerned with specific areas of deficiencies, i.e. for example, poor eye-hand control.

With these conditions in mind the following assessment technique will be outlined and discussed. The teacher may wish to use similar or different materials in her own program which may be equally as suitable since in an informal inventory the specific materials used are not as important as is the way in which it is used.

**Perceptual exploration.** The teacher should primarily be looking for specific examples of how well her children have developed good large-muscle control. These need not be severe deviations but may be apparent in such activities as throwing a ball, riding a bicycle, or skipping rope. She may want some of the children to perform such things as throwing a dart, to walk on their heels, or to hop on one foot. Furthermore, when the child is asked to perform a specific activity it should be noted as to how much difficulty the child has in grasping the idea of the act itself.¹

Laterality must be distinguished from such super-

ficial traits as handedness and being able to name the right and left sides. Whether or not a child does have an internal awareness of the two sides of his body and their difference, may be detected when the child is asked to use such words as "up", "down", "left", "right", and so on. This may be quite apparent when given specific instructions involving relative positions. Such an evaluation can be easily set up on a class basis by use of dittoed sheets on which each child is asked to place a different mark in various positions relative to the object on the ditto paper.

Directionality involves movement patterns directed towards objects in space. A child must learn what movement patterns are necessary to reach a desired goal. Good eye control is an important cue to detecting problems in the area. The child must match eye movements with hand movements which is a very precise and complex matching procedure. Activities utilizing eye-hand coordination tasks are good diagnostic tools, especially when a number of changes in direction are called for.

As was pointed out earlier, body image is important in that it gives the child a point of reference around which to


\[^2\] loc. cit.
organize the relative impressions which he receives from his environment. Thus the child can impose some kind of order upon his sensory impressions and construct a coherent totality. A test with which most elementary teachers are familiar is the "Draw-A-Person Test." This test is found on the Metropolitan Readiness Test and should provide the teacher with some significant information. Furthermore, observations concerning how well the child interacts with his environment may yield valuable clues. Does he frequently bump into objects? Does he have difficulty in moving parts of his body independent of other body movements? Can he point to various body parts when his eyes are closed?

Perceptual schematization involves a higher level of perceptual development. Within this area we are dealing primarily with visual symbols and the child's proficiency in recognizing the important aspects of a given stimulus configuration.

A child experiencing difficulty with form constancy frequently has difficulty in recognizing a letter form when that form is slightly changed. For example, if the letter is written smaller or larger than the original. A circle and an oval may "look" alike as may a square and a rectangle. This skill is usually evaluated by asking the child either verbally or non-verbally to identify a given shape, such as a circle or square. The task is made increasingly more difficult by making the choices more and more similar. Difficulty in this
area is also evident when a child has difficulty in recognizing a letter or word when it is in a different context or printed slightly different. Being able to name different letter shapes is also evidence of such a form generalization.

Spatial relationships is a term referring to a subject's ability to analyze simple forms and patterns.\(^1\) Difficulty in spacing words or word parts is one way of evaluating this skill. The child may "run" words together and this may be evident in his speech or written work. Also, his ability to reproduce a given shape is an indication of his ability in this area; such a test is found on the Metropolitan Readiness Test.

**Perceptual reorganization.** The beginning reader is presented with a complex array of stimulus patterns. Selecting the appropriate patterns is a difficult task. Figure-ground tests are frequently found in workbooks which require the child to "pick-out" a familiar object that is hidden in the picture. This can also be done by having the child find, for example, all the letter "a's" on a page. Difficulty in selecting the correct sound for a letter or group of letters is also a function of this skill.

Attempts to accommodate the wide variety of needs and abilities of first grade children is a tremendous task for the teacher. Not only must she be able to identify these needs but she must also decide which ones to set aside since it is nearly impossible to meet all of these demands. However, since one of the first grade teacher's primary goals is to teach most, if not all, of the pupils the skill of reading, curricular activities will undoubtedly be heavily weighted in reading. With this in mind the following guidelines are suggested.

(1) The first day the teacher is presented with a group of some thirty children many with considerable variations in ability. It is the teacher's task then to obtain some estimate as to what the abilities of each child are in the area of reading. A reading readiness test, such as the Metropolitan Reading Readiness Test can serve this function. The results of such a survey will probably point out that some of the thirty or so children are ready for reading whereas many of the children are at a reading readiness level.

(2) The teacher must be able to work with these children as a group as well as on an individual basis. However, the main strength of this program lies within the teacher's ability to identify the visual perceptual needs of the individual child and group him accordingly.
Consequently, it is important that the teacher be able to plan activities for the entire group but then to also be able to break the group into smaller groups for more intensive work in a specific area. It is suggested that the teacher attempt to establish three operational groups and plan individual activities for each of them. Thus, one group may be working on developing a sight vocabulary, while another group is working on perceiving similarities and differences in letter shapes, and the third group is developing better eye-hand coordination. Since the teacher is usually the only adult supervising the class, it will probably be necessary that two of the groups work independently and that the teacher devote most of her attention to the third group for that day. This, of course, would vary from group to group depending on where the greatest need was. It should also be noted that the members of each group might vary from day to day or week to week depending upon the skill being taught as well as the degree of accomplishment, of the individual with a particular skill.

(3) It is hoped that each individual teacher will develop her own unique program utilizing the materials with which she is most familiar. It is that particular skill that is important in the program and not necessarily the materials used that are primary considerations. The point here is that
the program should be skill oriented and not material oriented.

With these three points in mind a collection of information will be presented relative to the development of a school program for "reading disabilities". Sources for this information were many and include ideas from classroom teachers, special consultants and noted authors in the areas of the perceptually handicapped, as well as this writer's viewpoints.

**Generalizations Concerning the Learning Activities of Children Having Visual Perceptual Difficulties**

1. Lack of common physical skills of childhood...the nervous system does not perform its motor functions smoothly or well. This results in coordination deficits in small muscle use, in balance, and in large muscle coordination.

2. Disabled learners are distractible because their nervous system may permit too many extraneous stimuli for auditory, visual, and kinesthetic channels to reach a level of awareness which requires that he attend them.

3. Their emotional response is touched off by relatively slight stimuli, progresses rapidly to a point bordering on loss of control and takes longer to subside spontaneously.

4. Hyperactivity is common in these children as evidenced by restless body movements, noisiness and excessive talkativeness.
5. Impulsiveness in these children causes them to touch objects within view, interrupt conversations with unrelated ideas and to hit or contact others in social or play situations. They appear rude at times.

6. Their attention span is extremely short and it is also common to see deterioration of integrated behavior and blocking of learned responses under time pressure or emotional stress.

7. Their efficiency and command of skills varies from day to day, depending upon various internal and external conditions.

8. Talking and listening in all their variants are their preferred activities because they adapt to their environment primarily through the auditory rather than the visual modality.

9. They lack interest because they lack ability. They are described as having poor self-concept.

Points to Consider When Planning Activities for Children Having Visual Perceptual Difficulties

1. The tasks they are given must be on their level in respect to ability and interest. The task must be short enough so that they can complete them before their short interest and concentration span is exhausted. However, they may have many varied lessons
during the day.

2. Present one new skill to be learned at a time... the sound of a letter in phonics, a letter in writing, a process in arithmetic, followed with sufficient practice to attain a reasonable criterion of mastery. After one or several more new units are mastered they can then be combined with the old and related to it.

3. Spaced practice is superior for the perceptually handicapped child than practice which is massed in one long session.

4. Tasks should be clear-cut, definite, easily evaluated in objective terms and self-correcting, if possible.

5. Even after a skill has been taught and a new one begun, continuing regular practice on the first should be provided tapering off only when reliable recall is attained.

6. Programs must be specifically planned according to the pattern of weakness or deficit of the individual child.

Suggested Activities

Developing Laterality

1. A walking board can be used quite effectively in teaching a child the difference between the right side of the body and the left.
2. A balance board can also be used for this purpose. It requires more skill than a walking board, but may be used with the more advanced children.

3. Ask the children to identify the right and left parts of their bodies. This also teaches them body parts.

4. Activities requiring the child to shift his weight from one side of his body to another. For example, skipping, hopping, and jumping from one foot to another.

Developing Directionality

1. Games using a ball and requiring the child to anticipate and execute a movement are useful in developing this skill. Jumping rope, stepping stones, and hop-scotch are other examples.

2. Chalkboard activities in which the child is asked to connect different points in a left to right sequence. This activity can also be used with pencil and paper materials but not with children who are experiencing considerable difficulty in this area.

3. Finger painting is another activity in which the child can observe the results of various motor movements.

4. Using stencils is a means of "mapping" a motor activity so that a child can learn to duplicate this through visual clues. Also useful in developing a concept of basic form.

Developing Body Image

1. Have the class raise or touch various parts of their body as they are named.

2. Have the children move through an obstacle course which helps them to visually define their physical characteristics. This may include crawling under an object, around it, or through it.
3. Cut out different body parts and ask the child to put them together on a piece of construction paper. Also, ask the children to complete missing parts of partially drawn figures, or draw figures from memory.

**Developing Form Constancy**

1. Have children identify various characteristics of objects by having them sort for that quality. For example, sorting for "roundedness," or "squareness."

2. Have the children pick out different shapes in the classroom and identify them with a label.

3. Use stencils of basic shapes and have the children trace with them. Point out the differences between such similar shapes as a circle and oval.

4. Make up worksheets which have a variety of different shapes on them and have the children trace all of one of the shapes. This is similar to the Frostig Worksheets.

**Developing Spatial Relationships**

1. Have the children make patterns with pegboard materials.

2. Draw maps of where each of the children live and include landmarks.

3. Have the children arrange objects as specified by the teacher. For example, placing one block to the right, left, front, or back of another block.

4. Devise special projects where the children are working with such relationships as large-small, near-far, top-bottom, etc.

**Developing Skill in Perceptual Reorganization**

1. Have the children "pick-out" various qualities of
a given stimulus configuration. For example, have the children find all the letter "a's" on a page, or find the hidden pictures on a page, or name the different sounds that go with a particular letter.

2. Pick an ambiguous figure and have the children discuss what they think it is.

3. Select a word and discuss how that word may have different meanings in different sentences.

**Time Schedule**

The following time table will attempt to put this program into somewhat of a time perspective so that the teacher may get some idea as to how much time this writer feels would be appropriate for each activity.

9:00-9:30 Sharing experience--This activity is designed to enable the teacher to better know each of the children as well as the children to get to know the teacher. It is also an ideal time for the teacher to make some observations as to identifying individual needs for grouping.

9:30-10:00 Language Arts--Class activities dealing with some of the basic perceptual skills.

10:00-10:15 Recess

10:15-10:45 This usually the time when outside class activities are planned such as gym, music and art. This can be an ideal time for a "change of pace" in teaching perceptual skills; i.e. via physical education, music therapy, etc. However, it will require the cooperation of the various skills teachers.
10:45-11:20 Establish activities for three selected groups, and work on appropriate activities as determined by the perceptual needs of the child.

11:20-11:45 Storytime -- This is an opportune time to get the children, as a group, to "visualize" and use their imagination in dealing with the vocabulary they soon will be expected to know.

11:45-1:00 Lunch period

1:00-1:30 Language Arts -- Optional grouping; children may work on materials such as workbooks or worksheets which allow for individual differences or breakup into smaller groups. However, visual perception is the theme of the activities.

1:30-2:00 Other activities such as arithmetic

2:00-2:20 Recess

2:20-2:50 Other activities such as Science or Social Studies.

2:50-3:10 Class activities -- Gross Motor Skills should work out nicely at this time when the children are getting tired of seat work and anxious to leave. Games and dancing are excellent activities at this time.

3:10-3:20 Evaluating and planning for tomorrow. Emphasis is again on developing the child's imagination and planning ability.

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2 ibid.
Summary and Concluding Comment

A vast amount of data and observations have been collected over the past eighty years concerning children diagnosed as "disabled readers". They have had many problems in the school program ranging from difficulties in general adjustment to lack of physical skills. However, their most outstanding characteristics have probably been in their lack of reading success with evidence to suggest that these children have difficulty in dealing with visual symbols.

As the description of this problem evolved so did a number of causal theories. Defective neurological development was usually given as the single factor most responsible for the disorder. However, most "brain-damage" theories are based on inferences rather than concrete evidence. As a result much time and effort has been spent debating the issue of "brain-damage vs. environmental influences" as a causal factor in producing reading disabilities.

Assuming that "disabled readers" do lack visual perceptual skills and assuming that a good percentage of children in the regular classroom could profit from training in visual perception, this writer has suggested an educational model by which the needs of such children might better be met in the regular classroom. A closer examination of those visual perceptual skills often associated with the problem, how difficulties in this area might be assessed, and a suggested framework for hand-
ling such a disorder were also discussed in the preceding chapters.

In conclusion, "disabled readers" presents educators with a complex problem. Our understanding of this disability has improved but unfortunately not to a point where the problem is clearly defined or understood. In terms of educational planning many more factors need to be considered. Perception, especially visual perception, appears to be a significant underlying factor, but on the other hand, one must not overlook other causal factors such as auditory perception and cognitive skills. Furthermore, the educator must decide who to treat, what to treat, and when to treat perceptual difficulties. Consequently "flexibility of the school program" becomes an important issue. Lastly, one should keep in mind that the relationship between reading and visual perception has not been clearly defined by research. It is generally accepted by most educators that improving visual perception will also lead to improved reading achievement and this position is also taken by the writer. Thus, the type of model described in this paper would seem to be an essential element of the total school curriculum.
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