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ABSTRACT

Presented are guidelines for the development of elementary school programs to serve visually handicapped students in Indiana. The partially sighted child is defined and common behavioral characteristics are listed. Recommended are adequate physical facilities, the use of low vision aids, and stressed is the importance of near vision for educational achievement. Outlined are five visual skills related to academic skills such as eye movement skill and eye teaming skill. Offered are questions to aid in the selection of suitable instructional materials. Stressed for curriculum planning is that sight utilization does not damage the eyes. Large type books for language arts and basic reading are listed with prices. Mathematics materials and texts are listed for primary and upper elementary levels. Also noted are suitable materials for history, social studies, and geography. Listed are high interest and low vocabulary textbooks for slow learners and/or educationally retarded in social studies, history, science, and philosophy and psychology. Typing instruction is recommended. Other subjects briefly covered are industrial arts, home economics, art, foreign languages, music, and physical educationl Instructions for borrowing large print texts are included as are a textbook and educational material request form, a list of suggested sources of equipment, a bibliography, a listing of national organizations, and a glossary of terms relating to the eye. (DB)

AN APPROACH TO PROGRAM DEVELOPMENT

Visually Handicapped

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A project developed through cooperative finding:

Title I, ESEA
Title II, ESEA
Title III, Esea
Title VI, ESEA
State Special Education
Vocational Education

Contents

Definition

THE PARTIALLY SIGHTED CHILD

A partially sighted child is defined as having a visual acuity of 20/70 or less in the better eye after correction and who is able to use his vision as a principal means of education. For educational purposes, such a child can use printed and other visual materials and media, but is limited in the use of such matter in a variety of ways. Some children may be able to use conventional printed matter if a magnifying device or vision training is provided. Others may be able to read print only if it is available in large type. Still others may need a combination of vision training, large print and special lighting.

INCIDENCE

The prevalence formula used to estimate blind and visually handicapped in Indiana public schools is school population times .001. It should be noted that the most common estimate of incidence of partially sighted children seems to be that of the National Society for the Prevention of Blindness, i.e., one child in every five hundred of school age enrollment.

It is recognized that all children with the same visual acuity do not function in the same way. Frequently children who do need the above eligibility standards do not need special placement. The schools are encouraged to evaluate *each* child individually to determine his *visual functional ability* rather than his legal eligibility.

Identification

The most commonly used criteria for identifying partially seeing children for educational purposes is based upon visual acuity as determined by the Snellen Chart, namely " . . . corrected vision in the better eye of 20/70 or less." Failure to read the Snellen Chart has long remained the standard criteria for referral. Many authorities feel that by itself the Snellen is at best a rough estimate and even passing it is no assurance that a child does not have a defect of vision enough to require treatment. Foote and Crane suggest that "The only way to find every child who needs visual care is to arrange for a thorough and competent eye examination. This is especially true if a child exhibits any symptons of visual problems.

If we consider case findings in a larger sense the problem is broader than mere identification of handicaps. It involves the recognition of a potential eye disability and being alert to needs of children with known handicaps. The American Public Health Association states that "Observation of the child as he attemps to see near and distant objects is important regardless of the degree of his visual acuity. Often children with 'normal' 20/20 vision have an eye defect which can be suspected on the basis of observation alone."

Teacher observation and referral can be a very important factor in identifying the visually handicapped child. A study by Crane shows that the near vision tests refers almost as many pupils as the Snellen although this test gives more incorrect referrals than Snellen. When combined with Snellen and teacher judgment "about three-fourths of the pupils referred need care but the number of incorrect referrals exceeds the correct referrals."

Finally, it may be said that the decision as to which test or combination of tests should be used in a community should be determined by the consensus of an advisory committee. Such a committee might include school and health personnel, ophthalmologist and optometrist, and others concerned with the visually handicapped.

CHARACTERISTICS

The National Society for the Prevention of Blindness lists these behavior signs as significant in manifesting eye defects:

1. Attempts to brush away blur, rubs eyes excessively, frowns
2. Shuts or covers one eye, tilts head or thrusts it forward when looking at near or distant objects
3. Has difficulty in reading or in other work requiring close use of eyes
4. Blinks more than usual, cries often, or is irritable when doing close work
5. Stumbles or trips over small objects
6. Holds books or small objects close to eyes
7. Is unable to participate in games requiring distance vision
8. Is unduly sensitive to light
9. Has red-rimmed, encrusted, or swollen eyelids; recurring sties; inflamed or watery eyes; crossed eyes
10. Complains that he cannot see well; that he experiences dizziness, headaches, or nausea following close eye work; that he has blurred or double vision

Helping the Partially Seeing Child in the Regular Classroom, Pub. No. P-300 (New York: National Society for the Prevention of Blindness, Inc. 1965), pp. 4-5.

Teaching Environment and Low Vision Aids

THE ROOM

The room selected for the program should be a large, well-ventilated room with the following facilities:

1. There should be sufficient electrical outlets for talking book reproducers, record players and tape recorders.
2. Tables or desk with chairs which will provide comfortable working conditions to enable the visually-limited child to study independently and effectively.
3. Adequate lighting must be provided for those students who have remaining, useful vision.
4. If a child needs much reader service, a small quiet room is needed for the child and his readers when other activities in the resource room become too noisy for him.
5. Adequate large bookshelves are essential for storing of large type books and talking books.
6. Sufficient bulletin boards and chalkboards should be placed within the child's eye span.
7. A sturdy flattop table can be used for art work, and many other various uses.

IMPORTANCE OF LOW-VISION AIDS

The present shift of emphasis in school programs from sight conservation to sight utilization has occured in part because of the development of low-vision aids. Many children with very low visual acuity no longer need be expected to rely solely upon Braille or large-print books for their reading. Some are enabled to read ordinary print when trained even through they must hold it close, using magnifiers and special lenses. Exact refraction and stronger ordinary lenses have been helpful too. Fonda's study of 200 persons with low vision shows that "a substantial number can be partially rehabilitated with sub-normal vision aids."

Dr. Lebensohn, ophthalmologist at Northwestern University Medical School, states "most students with normal intelligence and motivation who have sufficient vision to walk about unaided, that is, 4/200 and a fair peripheral field, can be fitted with an optical aid with which they can read."

IMPORTANCE OF NEAR VISION

Changing educational concepts have focused more attention on near vision. In general "the near visual acuity corresponds to that for remote vision; but it is greater in myopia, less in hypermetropia and presbyopia." Therefore, separate tests are usually given for near and distant vision.

A study by Getman seems to indicate that far vision is inversely related to school performance, i.e., the majority of children who have 20/20 vision are not the good achievers in school. Those who fail the 20/20 line are usually the upper one-fourth of their class scholastically. This apparent contradiction–poor vision, good student–or–good vision, poor student seems to suggest that near vision is of more educational importance than distance vision. Studies of the rules and laws of vision in 1950 are based on the child in the learning years from birth to the age of ten rather than on adults, and indicate that vision can be learned. Visual care becomes "much more than the prevention of disease by medicine and treatments–it is the assurance of reaching the highest possible potentials of scholastic, social and occupational performance in a world that demands more of eyes and vision than ever before in the history of man."

The teacher of the visually impaired will find it invaluable to place her name on the mailing list of The Optometric Extension Program so that she may receive their literature. The *OEP News* is published at Duncan, Ohlahoma. The following information has been exerpted from their publications.

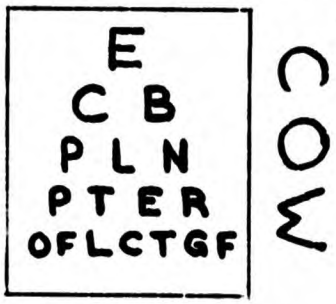
Vision is a process, an emergent one that grows and develops. It emerges as a highly symbolic process–a combination of all the other senses. In other words, it is the ability to understand what is seen from the light rays that impinge on the back of your eyes. Vision is mostly a *learned function*, and as a learned function it can be taught or developed to a high degree.

M. V. Senden, a German physician, many years ago reported upon a group of adults who had only shadow vision from birth because of cataracts due to apacities in the lens of the eye. When these cataracts were removed and glasses supplied to compensate for the missing lens so that the optical system of the eye was restored to a so-called normal degree, these individuals still do not see. For all practical purposes they were blind. They recognized colors only. Form and shape, distance and direction, had to be learned very slowly. To distinguish the difference between a square and a triangle took them many months to learn, and they first could make the distinction only by feeling the number of points. Thus one may have optically usable eyes but no vision. Studies done recently with chimpanzees reared in darkness showed similar results. Eyesight but no vision.

Vision then is a skill that is slowly learned by the organism as it develops and grows. Eyesight may be thought of as more related to the structure and function of the eye as such. Eyes are the tools of vision. If one thinks of the eyes solely as tools, then efficiency of vision will depend upon how the tools are used.

Most people think of vision only in terms of the smallest line of letters that can be read on an eye chart. Everyone is familiar with the designations of 20/20, 20/30, 20/200, etc. 20/20 has come to signify perfect vision. Actually this is a misconception inasmuch as visual acuity or contour discrimination is only one of thirty or forty visual skills that a child must possess if he is to expect satisfactory progress through school. There are many children who have 20/20, or even better–20/15 visual acuity, who are still visual problems and in need of visual care.

Below is a common illustration of the difference between visual acuity and meaningful vision.



The illustration is a typical example of a letter chart, while the three symbols on the right may be interpreted simply as a broken circle, a circle, and a jagged line. Turn the paper sideways and suddenly the three symbols take on a new meaning. It is this symbolic meaningful seeing, in other words reading, that all are concerned with these days. Researchers have found that when a child is focusing his eyes for meaning as opposed to just looking, he does it differently. He will focus closer to himself than the page when he is working for meaning, while in just looking his focus is on the page or farther away.

The Snellen Visual Acuity test came into use almost a hundred years ago. Since its inception it has been widely used as the sole test to screen the child's vision in school. If it is used routinely in all eye and visual examinations to determine first of all if there has been a loss of visual acuity and, if so, whether it may be improved by glasses to compensate for the condition that caused the lowering of acuity.

Loss of visual acuity in the growing child implies in many cases that eye problems, such as myopia (near-sightedness), high hyperopia (far-sightedness), or astigmatism (lack of point focus) may have developed or exists. Or, in still other instances, that some systematic disorder has had an adverse effect upon the eyes or the pathways leading to the brain.

Note that in all these instances something has already happened to the child before he shows this loss of visual acuity! Therefore the use of visual acuity test as a screening device is effective only after the disorder has occurred.

A visual problem may exist when there is a loss of ability to get meaning from symbols or to learn through vision to a degree comparable to the potential level of intelligence of the individual. This loss of ability may be due to immature visual and total development of the child. The visual problem is not initially an eye problem, but under the pressure of learning in school may lead to one.

An eye problem may esist when there are structural changes measurable in the eye such as high hyperopic, myopia, and astigmatism; misalignment (strabismum); disease or injury to the eye.

Skills other than Visual Acuity are necessary for visual efficiency:

a. Ability to see with each eye at the same time–without suppressing sight (mentally blocking sight).
b. Ability to focus each eye quickly and clearly to any distance in space.
c. Ability to center or point both eyes at the same time to any distance or direction in space.
d. Ability to fuse and maintain fusion–to superimpose the visual field of one eye with the visual field of the other eye and form a single tow-eyed field, and maintain it comfortably.
e. Ability to see in depth . . . to have stereopsis and recognize slight differences in depth.
f. Ability to see color.
g. Ability to see at night.
h. Ability to see out of the sides of our eyes–peripheral vision.
i. Ability to judge distance.

There are still other important skills that add to the visual efficiency of the school child.

Visual training first of all is a visual enhancement program. Vision is a learned and a developed skill. Like any other motor skill it can be improved through training as can learning to dance, to play a musical instrument, or to develop an athletic skill. It is a method to train some of the visual skills mentioned above.

Visual training is not a means of teaching reading or a solution to all reading problems. But where a visual problem is the basis for a reading problem then visual training may be of real value and will make the job of the educator that much easier.

The term orthoptics means straight eyes. Orthoptic exercises may be employed where an eye or eyes turn in or out or have a tendency to do so. Orthoptics may be used to improve the sight in an eye in a way which is not possible with glasses along. It may be used to build up the power and range of pointing the two eyes together. In effect, orthoptics mainly deals with defects in the pointing and steering mechanisms of the eyes.

Myopia optically means short focus. The myopic individual can see clearly those things close up. The more myopic he is, the less far away he can focus clearly.

Myopia usually increases with age and is generally believed to stop in adolescence. However many times it has been known to start or to continue into adult life. Unless it is of an extremely high degree and referred to as pathological myopia, there is not much danger of blindness resulting. Perhaps because of this, and because of the ease of compensation for the condition by wearing concave lenses, little research has been done into its causes.

School myopia, or myopia associated with close work appears as early as 5 or 6 years of age, in some children, in others as late as college. It may or may not progress (become worse), but more often than not, it does.

The standard procedure in years past has been to prescribe glasses to correct or compensate for the lack of distance sight. Instructions for wearing lenses vary from using them just to see at a distance, to wearing them for all activities including reading. In the opinion of some authorities when this latter procedure is followed, the myopia generally increases rapidly and glasses may be made

stronger every six months or so. Glasses here serve solely as a crutch necessary to be sure, but not a cure for the myopia.

Another procedure is to prescribe glasses that compensate less than the full amount of distant seeing and little if any for near seeing. To accomplish this a double lens (bifocal) is used. In some cases but not all, the progression of myopia may be slowed or stopped.

Visual training, to improve visual coordination and enhance space perception as well as train better distance discrimination has been successful in some cases in arresting the progression of myopia. So-called eye-exercises to cure myopia have been suggested, and many popular books and writings have appeared on the subject. However, except in cases where the myopia was less than one diopter (−1.00) and of recent origin, we have not seen any cases "cured."

It is possible to control some kinds of myopia to a degree, that is, slow down the progression or stop it, through the judicious use of bifocal lenses and visual training.

Bifocals for children are sometimes called developmental, training or achievement lenses. A school child may have 20/20 visual acuity, healthy eyes but have a visual problem that interferes with reading; either, he fatigues quickly, holds book to close, or reports the words blurring or doubling. The optometrist, aware that a prescription necessary to alleviate the near point reading problem would blur objects at distance, may solve this problem with bifocal lenses. Clear vision at distance and comfortable vision at near is attained.

WHY CAN'T JOHNNY READ?

One basic answer is that Johnny can't read because he can't see. Dr. Gesell, Research consultant of the Gesell Institute of Child Development, stated, "Vision is the key to a child's whole personality–and to understand a child, one must know the nature of his vision."

Modern science has devised tests to determine the visual ability of children from infancy. And from those tests, it is now possible to recommend what measures should be taken to better Johnny's chances in life.

"From the child's visual behavior it is possible to classify him as an achiever or a non-achiever," the American Optometric Association states in its report to the 1960 White House Conference on Children and Youth.

Four out of ten grade-school children are handicapped by faulty "near vision." And in most cases this handicap could be corrected with lenses or simple eye exercise.

Johnny's posture, personality and general behavior are also affected by poor vision.

A child depends more on vision than on hearing, taste, smell and touch combined. A child who doesn't see properly may tilt his head or squirm into weird positions to avoid using one eye.

If Johnny stoops, slouches, shambles and scuffs about, if he is anti-social and uninterested in sports, his vision may be the cause.

Vision training or glasses to help him adjust his vision to near tasks may be the answer.

If Johnny's problem is spotted in time, his eyes actually can be "reeducated" to do their job. Just as fighter poilts learned to spot and identify enemy aircraft in combat, young Johnny can be trained to see, to observe and to record what he sees–to grow into a mature and useful citizen.

Tests will determine whether Johnny can focus and operate his eyes as a working team. How fast is his perception and his accuracy in looking from one object to another? Can be sustain focus at reading distance? These questions are promptly answered.

Colleges are now instructing future teachers how to detect symptions of visual problems that may handicap a child. And experts urge that any child in the bottom third of his class be given a visual examination.

School achievement should not be judged solely by how well the child reads, anymore than it should be judged by how well he operates on the playground. A high performance in only one area is hardly satisfactory. Rather, a well-rounded performance in all areas of visual space should be sought.

The problem of myopia will continue to increase as more emphasis is placed on near work activities. Greater use of the chalkboard in place of workbooks could help. A variety of visual training activities incorporated into the classroom procedure might do the most good. More than anything else, funds for research into the multiple problems of myopia are needed before we can really help our children in this respect.

Five Visual Skills Related to Academic Skills

I. EYE MOVEMENT SKILL (Ocular Motilities)

A. PERCEPTUAL PURPOSE OF THIS SKILL:

To provide speed of visual scanning and visual inspection in all areas of classroom activities.
There are three aspects of this skill that be observed by the teacher:

1. Horizontal eye movements (side to side)

Academic pertinence

Accurate and fluid movements of the eyes across the lines of print in textbook and workbook, and the speed and accuracy of return to the next line of print on the page.

2. **Vertical eye movements (up and down, and some near to far movements).**

Academic pertinence

Accurate and quick eye movements from desk work to teacher and back to desk work. Vertical eye movements permit desk to chart and chalkboard inspections. They also permit inspections of columns of numbers, index maps and all positions of symbols on paper.

3. **Diagonal eye movements (corner to corner of page or desk area).**

Academic pertinence

Visual scan and search on workbooks and worksheets; visual inspection of tridimensionality on arts and crafts materials.

B. INDICATIONS OF A VISUAL PROBLEM:

1. Head turning instead of eye movements
2. Short attention span
3. Frequent loss of place on printed materials and worksheets
4. Frequent omissions of words and phrases
5. Repetitive omissions of the "small" words
6. Confusion of left and right directions
7. "Uphill or downhill" writing on paper
8. Poor orientation of drawings on page
9. Stumbling and clumsiness in all playground or classroom activity

C. TYPE OF PROBLEM:

1. **Academic (lack of preparatory experience)**

   Criteria:

   a. Improvements in classroom performance will be noted by the end of the first few weeks of school as the child becomes acquainted with the instructional program.
   b. Reducation of head turning movements will be observed as the child's understanding of the material increases.
   c. The child can be observed in the process of thinking his way through the problems of left to right directionality.
   d. Observable reduction of reversals and omission of words, short phrases, or numbers.
   e. Attention span will lengthen and become more acceptable on materials of interest, or at his level of understanding.

2. **Clinical (needs immediate referral for visual care)**

   Criteria:

   a. Visual materials will be avoided by the child whenever possible.
   b. Confusion continues in left to right directionality, and the child will not be able to think his way through a "direction" question.
   c. Head turning movements increase as the child is kept on visual materials.
   d. Attention span shortens on visual materials, but is notably increased on craft materials.
   e. Fatigue rate is notably higher on printed materials, and the child cannot keep up with his group on desk activities.

Related Comments:

The visual problem described above will not be identified by any of the standard screening tests used by the school nurse or special personnel. Any report that "his eyes are perfect" should be questioned, because this visual problem will not ordinarily, interfere with 20/20 on the wall chart. If this child is properly tested at near-point distances (inside 16 inches), poor discriminations of detail will probably be observable. If the teacher observes any of the above inadequancies, she should notify the parents so the child may have a complete visual examination. This examination is imperative if the problem continues *past the first six weeks of school.* If the visual problem continues beyond the third month of school, the value of the entire school year may be lost by the child. Proper visual care can recover, or establish, the eye movement skills in a comparatively short time, but if the academic values of the first half of the year are lost, it may take another full year in the same grade to gain the abilities and attitudes of academic competence. Parents report that when the visual problem is not cared for in the first month or six weeks of school, their children do not "catch up" until the school year is almost over.

II. EYE TEAMING SKILL (Binocularity)

A. PERCEPTUAL PURPOSE OF THIS SKILL:

To provide speed and effectiveness of visual identification and interpretation of printed details. Children must learn and establish excellent teaming of the two eyes if accuracy of visual grasp on words is to be achieved. The accuracy and speed of "focusing" is very dependent upon the degree of eye teaming the children achieve.

There are two aspects of this skill the teacher can observe:

1. **Horizontal teaming**

   Alignment of both eyes so they are in the position to inspect the same object or symbol at the same instant.

Academic pertinence:

Singleness and clarity of all curriculum materials.

2. **Near to far, and far to near teaming**

   Immediacy and 2 eyed clarity of objects or symbols at all interest points in the classroom.

Academic pertinence:
Immediacy and accuracy of 2 eyed recognition and transfer of words and numbers from chalkboard or chart to workbook, and vice versa.

B. INDICATIONS OF A VISUAL PROBLEM:

1. Complaints of seeing double (diplopia)
2. Repetition of letters within words
3. Confusion or repetition of words in same sentence
4. Omission of words, small phrases, or numbers
5. Squinting, closing, or covering one eye
6. Extreme head tilt, or working off to one side of desk
7. Drawing and writing will be very poorly placed on paper
8. Total postural deviations that continue in the same pattern of body distortions at all desk activities
9. Excessive blinking
10. Comprehension lower than the apparent abilities
11. Extreme fatigue on all visual materials

C. TYPE OF PROBLEM:

1. **Academic (lack of preparatory experience)**
   Criteria:
   a. Improvements will be noted by the end of the first month of school as the child becomes acquainted with instructional program.
   b. Drawing and writing placements on page will improve rapidly as the child becomes familiar with curriculum demands.
   c. Body posture patterns will change with the acquisition of skill in any activity.
   d. Body tensions and fatigue on visual materials will notably decrease.
   e. Attention span will lengthen in all school tasks.

2. **Clinical (needs immediate referral for visual care)**
   Criteria:
   a. One eye turns in, or out, when the child looks up from desk activities.
   b. The child will only succeed when a finger or marker, is used to keep his place in visual materials.
   c. The child cannot accurately copy materials from chart or chalkboard to the paper on his desk.
   d. The child loses his place if asked to locate items on the chalkboard that are also printed on worksheet or textbook.
   e. *More* clumsiness than usual in visually demanding tasks. *Less* clumsiness on playground or in the gym.
   f. Head tilts and postural warps increase on pencil and paper tasks.
   g. Fatigue rate increases on visual materials, and the child cannot keep up with his group.

Related Comments:

Problem in eye teaming may show up on some screening tests. Characteristically, the young child who is not obviously cross-eyed will pass the 20/20 with either eye, but if the covered eye is carefully observed during this screening test, it may be turned out of line behind the cover. Or, this child may have 20/20 with either eye, or have less ability when asked to report with both eyes open and uncovered. In any case, this child's parents should be informed immediately so that complete visual care can be given him immediately. Delay in visual care will either deter his academic progress, or allow him to learn to ignore (suppress) one eye. He may continue to do quite well in the subjects where he can learn by listening, but he will show extreme inadequacies in any independent reading or writing skills.

III. EYE HAND COORDINATION SKILL

A. PERCEPTUAL PURPOSE OF THIS SKILL:

The ability to make visual discriminations of size, shape, texture, and object location is dependent upon the use, practice, and integration of eyes and hands as *paired learning tools.* The skill and accuracy of eye-hand coordination for inspection of objects and making the written symbols are preparatory and basic to the visual interpretations of likelinesses and differences of the words or numbers printed in work and textbooks.

Academic pertinence:

The child's muscle awareness and his visual observations of his own hand movements in the reproduction of symbols (numbers, letters, words, forms, lines, formulii, etc.) assist him in acquiring the left to right concepts of his culture. This understanding of the cultural demands then assists him in gaining the left to right eye movements for the visual inspection of the printed pages of his textbooks.

B. INDICATIONS OF A VISUAL PROBLEM:

1. The child must feel of things, or run fingers over the printed page, before any interpretive decision can be made.
2. Paper work shows extreme lack of orientation on page, as if eyes were not being used to "steer" hand movements.
3. Lines of numbers and writing are crooked, poorly spaced, and not kept on the ruled lines of the paper.
4. The child can only keep his place in a visual task by using his hands, or fingertips, to steer his ocular movements across the page.
5. Clumsy, "careless," and messy craft work in

any grade after kindergarten or mid first grade.

C. TYPE OF PROBLEM:

1. **Academic (lack of prepatory experience)**
   Criteria:
   a. Improvements can be noted in the same class work session. (The eyes and hands are so biologically teamed that they should be immediately available to a child as soon as the task requirements are understood by him.)
   b. Gross tasks are done well, and difficulties are noted only in the more specialized tasks.
   c. All work at the chalkboard is more acceptable (form, continuity, and neatness) than at paper work.
   d. Using crayons or fingerpaints, the child should be able to complete simple representations of tridimensional (solid) objects on paper.

2. **Clinical (needs immediate referral for visual care) Criteria:**

   a. If any of the above indications of a visual problem persist, or are not notably improved in three to five class sessions, some degree of ocular or visual problem probably exists.

Related Comments:

The most common label used to describe inadequacies in early classroom performance is "Immaturity." It is now quite evident that the most common immaturity is actually a lack of eye-hand skill. Time alone will not eliminate this problem; in fact, delay is proper visual care may aggrevate the real problem. The child's parents should be notified immediately, and special help must be given the child if he is to succeed in academic demands. This child will need clinical help that goes beyond a 20/20 test on a wall chart and/or lenses for chalkboard clarity, *and the parents should be so informed.* The primary teacher should also provide several of the activities, already in use in many schools, that will establish the eye-hand coordination skills related to the demand of the curriculum. (See Section 3, Part III.)

IV. VISUAL FORM PERCEPTION (Visual Imagery, Visual Memory):

A. PERCEPTUAL PURPOSE OF THIS SKILL:

This is one of the major learning processes that allows the child to relate his primary experiences to the pictures and words he sees on the printed page. The skills of ocular motility, ocular teaming, and eye-hand coordination provide the perceptual information that permits the translation of object size, shape, texture, location, distance, and three dimensional solidity into understandable pictures and words. The interpretations of these symbols (pictures and words) through the visual mechanism is a skill derived from the *visual* and *tactual* skills. Visual form perception is a derived skill—not a separate nor independent skill. The ultimate purpose of this skill is the immediacy and accuracy of the visual discrimination of likenesses and differences so comprehension can be achieved, and the appropriate action can follow.

Academic pertinence:

The comprehension and manipulation of all curriculum content that is written or printed.

B. INDICATIONS OF A VISUAL PROBLEM:

1. Any confusion of forms that indicates difficulty in the visual recognition of likenesses and diferences.
2. Frequent return by the child to the use of his hands for the further investigation of likenesses and diferences.
3. Any evidence of a lack of skill in visualization (visual imagery or visual memory).
4. Any evidence of confusion of difficulty in the simple reproductions of symbols on paper.

C. TYPE OF PROBLEM

1. **Developmental (lack of preparatory experience)**
   Criteria:
   a. The child should demonstrate immediate improvements in visual form perception when he is given the opportunity to use his hands for reinforcement and clarification. Visual-tactual exploration. See next section for further details.)
   b. The child erases frequently in the attempt to make his paper work "look more like it should."
   c. Drawings and writing become neater and more acceptable after a few repetitions.

2. **Clinical (needs immediate referral for visual care)**
   Criteria:
   a. Full use of hands by the child does not give observable improvements. (See next section.)
   b. All paper work is erratic and sloppy, with simple forms and shapes distorted and incorrect.
   c. The child becomes too quickly discouraged and upset by his lack of ability to "Make good pictures."

Related Comments:

This is a area of learning readiness that must be

cooperatively approached by the teacher, the parents, and the vision specialist. Understandably, the kindergarten and first grade child should not be expected to demonstrate a high degree of skill in this area, but if a child is obviously poorer than his group, he must be given special attention. If a reasonable degree of skill is not acquired by second grade, the lack of form perception ability will be a hindrance in all academic areas with the most dificulty showing in spelling and writing.

It is imperative to state here that all training in form perception must be done in the basic underlying processes of ocular motilities and eye-hand coordinations rather than in repetitive practice on the symbols and forms themselves. (See Section 3, Part III).

V. RFFRACTIVE STATUS (Hyperopia, Myopia, Astigmatism, Refractive Problem):

This is really more than a skill area, but, like Form Perception, is a condition determined by the other areas of visual performance. This area of consideration is of such supreme importance, however, that every adult concerned with children and their academic achievement needs to be aware of any evidence of a refractive problem. Distortions, or inadequancies of the eyes, which alter the visual information signals (which the child must interpretively match with auditory and tactual signals every moment of every class day) can hinder the child's comprehension processes. Some of these ocular distortions can so completely override the auditory and tactual information signals that comprehension can be completely voiced.

A. INDICATIONS OF OCULAR DISTORTIONS:

1. Loss of comprehension in any reading task that is continued beyond a paragraph or two.
2. Continuing mispronounciations of similar letters or words.
3. Excessive blinking while reading or at desk tasks.
4. Holding book too closely, or getting face and eyes too close to desk materials.
5. Avoidance of all near-centered visual tasks.
6. Any complaint of discomfort or inability to learn tin a task that demands consistent visual interpretations.
7. Closing or covering one eye while reading or doing desk work.
8. Frequent errors in transfer from chart or chalkboard to paper.
9. Frequent errors in transfer from reference book to notebook or paper.
10. Squinting and scowling to see what teacher has written on chalkboard.
11. Moving nearer to chalkboard to see what is written on it.
12. Redness or tearing of eyes after short periods of visual activity.
13. Frequent rubbing of eyes during or after short periods of visual activity.
14. Complaints of eyeache or headache by mid-morning or early afternoon.
15. Observable fatigue and sag after intensive visual activities.

B. TYPE OF PROBLEM

There is no differentiation possible between an academic and a clinical refractive problem. These are all clinical problems, regardless of onset. These problems will worsen with classroom demands. The child may become a non-achiever to avoid the increase in visual problems and discomfort, or he sacrifices visual abilities and increases his ocular distortions to maintain achievement. In either case, he suffers the consequences.

Related Comments:

The fifteen items above are the most obvious of the symptoms of a visual problem related to a refractive problem. There may be other, less specific, symptoms, such as the lack of interest, lack of motivation, irritability, etc. Only two or three of the fifteen trouble signs listed above will be verified or even discovered by the wall chart test and other screening devices. When the child is given an "eye test" and the report of "full 20/20" comes back, there must be further examination of visual abilities by a more thorough, examiner. The child who is to gain over 80 percent of his knowledge through his visual mechanism, and who will spend the majority of his daily classroom time in visual tasks at his desk, must have the full benefits of the visual examination that gives adequate and careful consideration to the academic demands put upon his eyes.

Reprinted by permission from ***"The Primary Visual Abilities Essential to Academic Achievement"*** compiled by staff members and consultants of the Optometric Extension Program Section of Optometric Child Care and Guidance, Duncan, Oklahoma, 1964.

Considerations in the Selection of Instructional Materials for Visually Impaired Children

The following questions are to be used as a guide in selecting instructional materials for visually impaired children. The relevance and significance of each question will depend upon specific needs and purposes.

The questions are based on comments from more than 400 persons who participated in a study done under the auspices of the American Printing House for the Blind and the Instructional Materials Reference Center of Louisville, Kentucky. These persons were working with multi-handicapped visually impaired children. They are equally applicable to the partially-sighted.

1. Is a multi-sensory approach emphasized? Is the development of the senses, preferably more than one sense modality, promoted?
2. Are the materials multi-purposive? Can they be adapted in a number of ways?
3. Is practicality stressed: Is there a focus on everyday situations and prevocational skills?
4. Is simplicity incorporated into the design? Are non-essential elements eliminated?
5. Are the materials highly motivating? Do they have built-in rewards? Do they use a high interest, low vocabulary approach?
6. Is the learning of basic skills and knowledge incorporated? Are these materials designed to help teach elementary concepts which may be accomplished by other children through incidential learning?
7. Are the materials structured for sequential learning? Are they programmed from the very simple to the more complex?
8. Is each item sturdy and durable? Can they be used by older children who function on very elementary levels?
9. Do the materials deal more with concrete experiences than with abstract concepts? Is the child involved in learning by doing?
10. Do the materials focus on the development of communication and language? Is the area of listening skills development fostered?
11. Is independent functioning promoted?
12. Can the materials be used by parents?
13. Do the materials provide for repetition? Are they designed to present the same concept in a variety of ways?
14. Do the materials meet the needs of the older child? Are these items of particular value in the light of a limited quantity of instructional materials available for older multi-handicapped visually impaired children?

Curriculum

In working with the children assigned to classes for the visually handicapped the regular grade level curriculum is followed as much as possible –always with the realization that variations and releases from this structure may be necessary for the individual child. It is imperative that the child be given opportunity for successful completion of a task and for achievement commensurate to his present functional level of ability. The teacher will realize that this may frequently mean a retreating to academic teaching several years below the child's chronological age-grade level. However, once begun toward success, many of these pupils gain remarkably rapidly in the basic learning areas. This is to say that there is not a definite curriculum design for partially-sighted children; teachers must structure their programs to the needs of the individual pupil.

The same general methods of instruction used for normally sighted students are equally valid for a visually handicapped student. However, the visually handicapped will need assistance with such classroom activities as handling diagrams, chalkboard illustrations, mapwork, science experiments and mathematical symbols. He may need a magnifying glass or other low vision aid or a high intensity lamp to provide extra light to complete his academic work.

Success in the education of visually handicapped children is directly related to their teacher and to the adequacy of materials and methods provided for both the teacher and the students. Teaching methods in the class for the visually handicapped are basically visual and aural with classwork demonstrated on the chalkboard and seatwork often done in workbooks and large print books.

In addition the visually handicapped child needs an auditory-tactile approach to learning with a strong emphasis on real experiences and concrete examples. The creative teacher accepts a visually handicapped child in class as a challenge to adapt her methods of instruction from visual to auditory-concrete-tactile presentation. The instruction and learning activities of this classroom should call upon other senses in addition to residual vision to invoke and stimulate learning which gives every child an opportunity to receive information through all available sensory channels.

However, one of the most important concepts real changes in the education of the visually impaired is the replacement of the concept of sight conversation with sight utilization, and the *use of print whenever possible* as an educational tool for many children with severe visual limitations. Special Education of visually handicapped children entered a new era when it became apparent that use of vision rarely results in damage. Sight utilization rather than conservation came to be stressed. It was realized

that under proper conditions children learn to make good use of even slight amounts of residual vision. Other new ideas adopted concomitantly were:

1. Reading in poor light does not cause harmful organic changes.
2. A partially seeing or even normal sighted person will read better with practice, and learn to read smaller and smaller print.

Important Points to Remember:

Use does not injure the eye;
Glasses cannot correct all visual impairments;
Large print does not enable all children to see better;
The need for large print is determined for each child individually.
Many recreational activities are suitable for partially sighted children.

The partially seeing group can now include children once considered legally blind. If their vision permits education through the channel of print, their adjustment in a seeing world may be eased considerably, and they make better social, educational and vocational adjustments.

This educational re-classification permits those identified as legally blind (20/200) who can use their sight even to a limited degree in getting about, or who have form, movement or light perception, to make maximum use of the vision which remains. Jones has indicated that these children can be taught to use light perception in orientation and independent travel. Form perception helps in distinguishing movement and colors. A careful analysis of colors, lighting and contrasts may even help to broaden and improve the child's range of visual perceptions.

The Instructional Materials Reference Center for Visually Handicapped of the American Printing House for the Blind in cooperation with the Bureau of Education for the Handicapped has developed an excellent listing of commercially produced teaching-learning aids. The publication is entitled COMMERCIAL AIDS THAT MAY BE USED OR ADAPTED FOR VISUALLY HANDICAPPED. Every teacher of the visually handicapped will profit from obtaining a copy of this publication. In addition IMRC has produced the second in a series, entitled *Handbook for Teachers of the Visually Handicapped.* Its emphasis is toward information concerning the blind but there is much valuable information which applies also to the partially-sighted. A third publication which is a necessity for the teacher of the partially sighted is the *Teacher's Guide for Development of Visual Learning Abilities and Utilization of Low Vision.* Again the publisher is American Printing House for the Blind. There is a catalog entitled *General Catalog of Large Type Textbooks* available from American Printing House for the Blind, as well as brochures entitled *Relief Globes and Plaques; Maps of the United States,* and *Reading Stands* and *Racks.*

The following information contains examples of materials of interest to all teachers since the conditions noted are common to most classroom situations. The list of suggestions is not intended to be all-inclusive, because we realize that some teachers and pupils may devise other methods and techniques of performing various phases of school work that are equally as effective or better than some of these noted.

ACHIEVEMENT

The partially-sighted student is expected to compete with the sighted pupils in his classroom. His marks should be based on his accomplishments in competition with his classmates and he should not be exempted from any work assignments. He should be encouraged to be part of the class group and participate in its activities.

LANGUAGE ARTS

Special attention should be given to the basic structure of the language in the parts of speech, punctuation and rules of grammar. Spelling should be stressed at all grade levels.

The teacher should verbalize all work when writing on the chalkboard. She should read written exercises to the visually handicapped student if they cannot be typed in large print. Tests, pop quizzes and assignments turned in to the teacher may be typed by the students to enable the teacher to evaluate his work. Class discussion and participation should be encouraged.

Large type books are available. Tapes can be made of special books and tape recorders can be obtained in certain cases. Supplementary materials available to the partially-sighted student may be incorporated into his program for credit and enrichment. The Talking Book records available to the student may be incorporated into a classroom project and thus be valuable to the entire class.

Language Arts: English Grammar

GUIDE TO MODERN ENGLISH: 7-8 Blough, et al. Scott, 1968. (1969)
7– VII. 3 v; approx. 600 pp. 4-0979 ..... $37.95
8–VIII. 3 v; approx. 600 pp. 4-0980 ..... 37.95

Language Arts: Spelling

GROW IN WORD POWER: word games and exercises selected from Reader's Digest Educational Edition. Moreda, comp.; RDA. 1067. (1969) VII-XII.
Pamph; 140 pp. 4-0910 ..... $ 7.45

READING

Large type books are available for the partially sighted. Talking books are provided free of charge to partially-sighted students. There is a large selection of recorded material that can be obtained through the Perkins School for the Blind which is the state distributing facility. Books can also be taped and tape recorders can be provided in certain instances when this method of reading is considered most practical. Sighted readers are also utilized for reading purposes and, in this instance, it is the responsibility of the student and school authorities to make the necessary arrangements for scheduling and paying the readers if they are not on a volunteer basis. Books can be taped, recorded or enlarged on request of the teacher or the student. Regular print textbooks can be enlarged.

REGULAR TEXTBOOKS

Language Arts: Basic Readers

*GINN 360 READING PROGRAM. Clymer, et al. Ginn, 1969. (1971):

*pp 2-3 (Levels 3-4 – Skills Handbook for A DUCK IS A DUCK and HELICOPTERS AND GINGERBREAD. I. 24 pt. 2 pamph; approx. 160 pp. 4-0801 ..... $ 7.60

*P (Level 5) – Skills Handbook for MAY I COME IN? I. 24 pt. 3 pamph; approx. 192 pp. 4-0802 ..... 7.70

*1[1] (Level 6) – Skills Handbook for SEVEN IS MAGIC. I. 24 pt. 2 pamph; approx. 224 pp. 4-0803 ..... 9.20

*2[1] (Level 7 – Skills Handbook for the DOG NEXT DOOR. II. 21 pt. 2 pamph; approx. 224 pp. 4-0804 ..... 9.20

*2[2] (Level 8) – Skills Handbook for HOW IT IS NOWADAYS. II 21 pt. 2 pamph; approx. 224 pp. 4-0805 ..... 9.20

*3[1] (Level 9) – WITH SKIES AND WINGS. III. 19 pt.

Text – 2 v; approx. 380 pp. 4-0818 ..... 19.00

Skills Handbook – 2 pamph; approx. 224 pp. 4-0806 ..... 9.20

*3[2] (Level 10) – ALL SORTS OF THINGS. III 18 pt.

Text – 2 v; approx. 340 pp. 4-0819 ..... 16.80

Language Arts: Reading Skills Series

*SPECIFIC SKILL SERIES. Boning. Barnell Loft. (1971):

*DRAWING CONCLUSIONS:

*Book A. I. 24 pt. Pamph: approx. 60 pp. 4-0514 ..... $ 2.70

*FOLLOWING DIRECTIONS:

*Book A. I. 24 pt. Pamph: approx. 60 pp. 4-0671 ..... 2.70

*Book B. II 18 pt. Pamph: approx. 60 pp. 4-0672 ..... 2.70

*Book C. III. 18 pt. Pamph: approx. 76 pp. 4-0673 ..... 3.10

*Book D. IV. 18 pt. Pamph: approx. 76 pp. 4-0674 ..... 3.10

*Book E. V. 18 pt. Pamph: approx. 120 pp. 4-0675 ..... 5.00

*Book F. VI. 18 pt. Pamph: approx. 120 pp. 4-0676 ..... 5.00

*GETTING THE FACTS:

*Book A. I. 24 pt. Pamph; approx. 60 pp. 4-0808 ..... 2.70

*Book B. II. 18 pt. Pamph; approx. 60 pp. 4-0809 ..... 2.70

*Book C. III. 18 pt. Pamph; approx. 76 pp. 4-0810 ..... 3.10

*Book D. IV. 18 pt. Pamph; approx. 76 pp. 4-0811 ..... 3.10

*Book E. V. 18 pt. Pamph; approx. 120 pp. 4-0812 ..... 5.00

*Book F. VI. 18 pt. Pamph; approx. 120 pp. 4-0813 ..... 5.00

*GETTING THE MAIN IDEA:

*Book A. I. 24 pt. Pamph; approx. 60 pp. 4-0801 ..... 2.70

*LOCATING THE ANSWER:

*Book A. I. 24 pt. Pamph; approx. 60 pp. 4-1289 ..... 2.70

*Book B. II. 18 pt. Pamph; approx. 60 pp. 4-01290 ..... 2.70

*Book C. III. 18 pt. Pamph; approx. 76 pp. 4-1291 ..... 3.10

*Book D. IV. 18 pt. Pamph; approx. 76 pp. 4-1291 ..... 3.10

*Book E. V. 18 pt. Pamph; approx. 120 pp. 4-1293 ..... 5.00

*Book F. VI. 18 pt. Pamph; approx. 120 pp. 4-1294 ..... 5.00

*USING THE CONTEXT:
- *Book A. I. 24 pt. Pamph; approx. 84 pp. 4-2684 ..... 3.50
- *Book B. II. 18 pt. Pamph; approx. 60 pp. 4-2685 ..... 2.70
- *Book C. III. 18 pt. Pamph; approx. 76 pp. 4-2686 ..... 3.10
- *Book D. IV. 18 pt. Pamph; approx. 76 pp. 4-2687 ..... 3.10
- *Book E. V. 18 pt. Pamph; approx. 120 pp. 4-2688 ..... 5.00
- *Book F. VI. 18 pt. Pamph; approx. 120 pp. 4-2689 ..... 5.00

*WORKING WITH SOUNDS:
- *Book A. I. 24 pt. Pamph; approx. 60 pp. 4-2801 ..... 2.70
- *Book B. II. 18 pt. Pamph; approx. 60 pp. 4-2802 ..... 2.70
- *Book C. III. 18 pt. Pamph; approx. 76 pp. 4-2803 ..... 3.10
- *Book D. IV. 18 pt. Pamph; approx. 76 pp. 4-2804 ..... 3.10

MATHEMATICS

For the partially-sighted student, the teacher must be certain to explain in detail what he is writing on the chalkboard. If possible, he should refer, for purposes of demonstration, to examples which are worked out in the textbook. Large print books are available. Much oral work is recommended and tactual aids should be used whenever possible. Many special devices, such as boards for drawing, raised diagrams and geometric figures are available, and other peg boards and counting devices are helpful.

The student should be required to work out step by step a sufficient number of examples of each type to demonstrate that he fully understands each process, but for purposes of speed, he should then be allowed to condense his steps for remaining examples if he is proficient in mental arithmetic.

The partially-sighted student in writing mathematics, should be advised to allow enough space for the clear and legible working out of his problems. When necessary, work may be enlarged for such a pupil by the teacher, a classmate, or perhaps by the art class. Large charts are helpful.

Tests may be enlarged for or dictated to the partially-sighted student, and the answers may be given in longhand, on the typewriter or orally.

Solid geometry has proven to be most difficult except for exceptional students and a careful screening should be done before permitting students to take this particular subject.

There are several aids to assist the student in learning mathematics concepts.

The Sewell Raised Line Drawing Kit (AFB Catalog) is used to draw tactile figures and is especially helpful to the student in working geometric problems. The kit consists of a rubberized board, compass, protractor, ruler, writing stylus and acetate paper.

The Graphis Aid for Mathematics (APH Catalog) will assist the student in plotting graphs, slope and geometry construction. The kit consists of a rubberized board embossed with vertical and horizontal lines, tacks, rubber bands and flat spring wires.

Other aids include the abacus, embossed graph paper, Mitchell Geometric forms, etc. (APH Catalog).

Perhaps a need for special help or extra periods of instruction will be indicated, and a workable supplementary program be put into effect. Because help is so often required in this subject, the student should be checked carefully in the beginning of the course in order to arrange for supplementary help before he falls behind in his work.

HIGH-INTEREST, LOW-VOCABULARY TEXTBOOKS

Mathematics

*TARGET SERIES Parky. Mafex., 1967 (1971). High School:
- *Book IV – EMPLOYMENT PHASE: OCCUPATIONS, MATHEMATICS FOR EMPLOYMENT. 2 pamph; approx. 310 pp. 4-1363 ..... $16.80
- *Book V – CITIZENSHIP PHASE: SOCIAL SKILLS, MATHEMATICS FOR CITIZENSHIP. 2 pamph; approx. 312 pp. 4-1362 ..... 16.80
- *Book VI – FAMILY LIVING AND BUSINESS PHASE: FAMILY LIVING, MATHEMATICS FOR FAMILY LIVING. 3 pamph. approx. 470 pp. 4-1361 ..... 25.20

*HOUGHTON MIFFLIN MODERN MATHEMATICS SERIES:
- *MODERN SCHOOL MATHEMATICS (structure and use). Duncan, et al. Houghton, 1970. (1971)
  - *Grade 1. I 16-18 pt. 4v; approx. 550 pp. 4-1437 ..... 29.20
  - *Grade 2. II. 24 pt. 4v; approx. 550 pp. 4-1438 ..... 29.20
  - *Grade 3. III. 18-20 pt. 3v; approx. 630 pp. 4-1439 ..... 31.80
  - *Grade 4. IV. 18 pt. 3v; approx. 650 pp. 4-1440 ..... 31.80
  - *Grade 5. V. 18 pt. 3v; approx. 650 pp. 4-1441 ..... 31.80
  - *Grade 6. VI. 18 pt. 3v; approx. 600 pp. 4-1442 ..... 31.80

LEVEL ONE
(For School Grade I - III)

Each Classroom Needs:

NUMBERAID FOR TEACHER. TE-902 ..... $20.00

CHALKBOARD FOR USE WITH LARGE NUMBERAID TE-954 ..... 20.00

The above items must be purchased from:

NASCO
Fort Atkinson, Wisconsin 53538

Each Sighted Teacher Needs:

INDIVIDUALIZED MATHEMATICS: LEVEL ONE Schott.
APH, 1963. (ink print materials). I - III.

Segment 1 – COUNTING SUMMARY. Pamph; 32 pp. 8 - 6241 ..... 1.15
Segment 2 – ADDITION SUMMARY. Pamph; 36 pp. 8 - 6242 ..... 1.15
Segment 3 – MULTIPICATION SUMMARY. Pamph; 36 pp. 8 - 6243 ..... 1.15
Segment 4 – SUBTRACTION SUMMARY: 32 pp. 8 - 6244 ..... 1.15
Segment 5 – DIVISION SUMMARY. Pamph; 32 pp. 8 - 6245 ..... 1.15

Each Visually Handicapped Teacher Needs: Large type counterparts of the above materials, as listed below.

INDIVIDUALIZED MATHEMATICS: LEVEL ONE (adapted for the blind). Schott
APH. 1961. I - III.

*Segment 1 – COUNTING SUMMARY. Pamph; 69 pp. 6 - 6241 ..... 1.15
*Segment 2 – ADDITION SUMMARY. Pamph; 64 pp. 6 - 6242 ..... 1.05
*Segment 3 – MULTIPICATION SUMMARY. Pamph; 64. 6 - 6242 ..... 1.05
*Segment 4 – SUBTRACTION SUMMARY. Pamph; 59 pp. 6 - 6244 ..... 1.05
*Segment 5 – DIVISION SUMMARY. Pamph; 50 pp. 6 - 6245 .95

Each Large Type Student Needs:

INDIVIDUALIZED MATHEMATICS: LEVEL ONE
Schott, APH, 1961. I - III

Segment 1 – COUNTING SUMMARY. Pamph; 72 pp. 4 - 2925 ..... 2.70
Segment 2 – ADDITION SUMMARY. Pamph; 72 pp. 4 - 2926 ..... 2.70
Segment 3 – MULTIPICATION SUMMARY. Pamph; 72 pp. 4 - 2927 ..... 2.70
Segment 4 – SUBTRACTION SUMMARY. Pamph; 72 pp. 4 - 2928 ..... 2.70
Segment 5 – DIVISION SUMMARY. Pamph; 72 pp. 4 - 2929 ..... 2.70

NUMBERAID FOR THE BLIND 1 - 0475 ..... 2.50

PLASTISLATE KIT (large type). (Includes 3 pencils, and 1 eraser).
1 - 0477 ..... 1.40

LARGE TYPE LATTICES. 4 - 2924 ..... 1.25

*These materials are embossed in accordance with the 1956 NEMETH CODE and the NBA INTERIM NEMETH CODE, and not in accordance with the NEMETH CODE OF BRAILLE MATHEMATICS AND SCIENTIFIC NOTATION, 1965.

LEVEL TWO
(For School Grades IV - VI)

Each Sighted Teacher Needs:

INDIVIDUALIZED MATHEMATICS: LEVEL TWO (adapted for the blind). Shott APH, 1963 (ink-print materials.) IV - VI

Segment 1 – POSITIVE DECIMAL NUMBERS, FACTORING, GREATEST COMMON FACTOR, MULTIPLES, LEAST COMMON MULTIPLE, PRIMES, DIVISIBILITY, MULTIPICATION AND DIVISION ALGORISMS. APPROXIMATE DECIMAL NUMBERS, RATIO, PROPORTION, PER CENT. Pamph; 52 pp. 8 - 6246 ..... $ 1.70

Segment 2:

Part 1 – FRACTIONAL PARTS: UNIT FRACTIONS AND THEIR DECIMAL EQUIVALENTS: ADDITION OF POSITIVE PROPER, IMPROPER AND DECIMAL FRACTIONS AND WHOLE, MIXED AND MIXED DECIMAL NUMBERS. Pamph; 60 pp. 8 - 6247 ..... 2.00

Part 2 – MULTIPICATION, SUBTRACTION AND DIVISION OF POSITIVE PROPER, IMPROPER AND DECIMAL FRACTIONS AND WHOLE MIXED AND MIXED DECIMAL NUMBERS. Pamph; 44 pp. 8 - 6248 ..... 1.40

Segment 3 – ROMAN NUMBER SYSTEM: EQUATIONS AND LITERAL NUMBERS: GENERALIZATIONS: LAWS OF MATHEMATICS. Pamph; 56 pp. 8 - 6249 ..... 1.70

Segment 4 – ELEMENTARY GEOMETRY:

Part A – GEOMETRIC FORMS: GEOMETRIC CONSTRUCTION: GEOMETRIC DRAWING: INTRODUCTION TO NON-METRIC GEOMETRY: FORMULATION. Pamph; 76 pp. 8 - 6250 ..... 2.20

Part B – GEOMETRIC FORMS: GEOMETRIC CONSTRUCTION: GEOMETRIC DRAWING: INTRODUCTION TO NON-METRIC GEOMETRY: FORMULATION. Pamph; 80 pp. 8 - 6251 ..... 2.45

Segment 5 – EXACT AND APPROXIMATE MEASUREMENT: THE UNIT OF MEASURE: DENOMINATE NUMBERS: THE METRIC SYSTEM: LINEAR MEASUREMENT: AREA: VOLUME: MEASUREMENT OF ANGLES: THE ENGLISH SYSTEM OF MEASUREMENT. Pamph; 60 pp. 8 - 6252 ..... 2.00

Each Visually Handicapped Teacher Needs: Large type counterparts of the above materials, as listed below.

INDIVIDUALIZED MATHEMATICS: LEVEL TWO
Schott. APH, 1963. IV - VI. (For contents, see teachers materials above):

*Segment 1 – 2 Pamphs; 109 pp. 6 - 6246 ..... 1.90

*Segment 2:

Part 1 – 2 Pamphs; 139 pp. 6 - 6247 ..... 2.30

Part 2 – Pamph; 88 pp. 6 - 6248 ..... 1.55

*Segment 3 – 2 Pamphs; 135 pp. 6 - 6249 ..... 2.30

*Segment 4:

Part A – Pamph; 144 pp. 6 - 6250 ..... 2.50

Part B – Pamph; 142 pp. 6 - 6251 ..... 2.50

*Segment 5 – 2 Pamphs; 144 pp. 6 - 6252 ..... 2.50

*These materials are embossed in accordance with the 1956 NEMETH CODE and the NBA INTERIM CODE, and not in accordance with the NEMETH CODE OF BRAILLE MATHEMATICS AND SCIENTIFIC NOTATION, 1965.

Each Large Type Student Needs:

INDIVIDUALIZED MATHEMATICS: LEVEL TWO, Schott APH, 1963-64. IV - VI.
(For contents, see teachers materials above):

Segment 1 – Pamph; 88 pp. 4 - 2930	$ 2.95
Segment 2:	
Part 1 – Pamph; 100 pp. 4 - 2931	3.95
Part 2 – Pamph; 84 pp. 4 - 2932	2.95
Segment 3 – Pamph; 84 pp. 4 - 2933	2.95
Segment 4:	
Part A – Pamph; 136 pp. 4 - 2934	4.70
Part B – Pamph; 128 pp. 4 - 2935	4.45
Segment 5 – Pamph; 84 pp. 4 - 2936	2.95
FRACTIONAID (large type). 1 - 0484	25.00
GEOMETRAID. 1 - 0481	10.00
PLASTISLATE KIT (Large type). (Includes 2 pencils and 1 eraser). 1 - 0477	1.40
APPLIED BUSINESS MATHEMATICS: 8th ed. Piper and Gruber, South-Western, 1965. (1969). X - XII. 4 v. approx. 850 pp. 4 - 0104	50.60

HISTORY

Much oral discussion is helpful. Large print textbooks are available. Talking Book records may be specially helpful in the study of history.

The acceptance and encouragement by the teacher of the pupils using outside material and giving supplementary reports may be stimulating and valuable to a partially-sighted student.

Dramatization of events may work in well with the enrichment of history, and is an area in which visually-handicapped students could well participate and find enjoyment.

SOCIAL STUDIES

Three-dimensional maps and globes are available from the American Printing House for the Blind and a number of commercial publishers.

Volunteers, teacher aides or the resource teacher may record material unavailable in large print. There may be textbooks available in large print which will parallel the text being studied in the class. When ordering a text for use by the student, be sure to order the atlas at the same time. APH texts and atlases cannot be sold separately except for replacement.

GEOGRAPHY

Much oral work is recommended. Large type books are available, as well as recordings. Careful explanations by the teacher of map referrals and other projects are necessary.

While map work may present difficulties to the visually-handicapped student, certain types of maps, globes, and charts are quiet helpful. Maps with raised outlines and relief globes are available for the student as well as dissected maps to give a knowledge of exact size and shape of states and countries. The student should be required to have a good general knowledge of these maps and this can usually be tested orally by the teacher without too much demand for the production of actual maps by the student.

Maps with few details and large lettering are used by the partially-sighted student. Outline maps are available. Those of plasticine, paper mache, and "take-apart" wooden pieces can be used beneficially by the partially-sighted student. Relief maps of other types can be quite helpful. In place of complicated maps, assignments may be given.

HIGH-INTEREST, LOW-VOCABULARY TEXTBOOKS
(For Slow-Learners and/or Educationally Retarded)

Social Studies

#*TARGET SERIES. Mafex Associates. VII-VIII:

Citizenship Phase: I LIVE IN MANY PLACES. Matayas. 1963 (1969	
Text–Pamph; 52 pp. 4-2524	$ 1.7
Student Activity Book–Pamph; 60 pp. 4-2525	3.5
Employment Phase: PETE SAVES THE DAY and THE JOKE THAT WASN'T FUNNEY Matayas, et al. 1962 (1969)	
Text–Pamph; 76 pp. 4-2522	4.0

Student Activity Book–Pamph; 48 pp. 4-2523 ..... 2.60
Family Living–Family Business: THE OLD SHOE MYSTERY. Michelangelo and Travis 1963 (1969)
Text–Pamph; 56 pp. 4-2520 ..... 1.70
Student Activity Book–Pamph; pp. 4-2521 ..... 3.10

REGULAR TEXTBOOKS

History

#*MEN AND NATIONS: A world history; second ed. Maxour and Peoples. Harcourt, 1968 (1969)
X-XII. 6 v; approx. 1600 pp. 4-1380 ..... $92.10
MANKIND IN TIME AND PLACE SERIES. Cooper, Sorenson, et al. Silver, 1969 (1969)
LEARNING TO LOOK AT OUR WORLD. IV. 3 v; approx. 480 pp. 4-1208 ..... 27.40
THE CHANGING NEW WORLD: NORTH AND SOUTH AMERICA
V. 4 v; approx 1000 pp. 4-0348 ..... 53.20
THE CHANGING NEW WORLD: UNITED STATES AND CANADA. V:
(In view of the fact that the text of this title is identical to ink pages 1-394 of THE CHANGING NEW WORLD: NORTH AND SOUTH AMERICA listed above, it will not be reproduced in either large type or Braille, since anyone needing it can use the proper sections of THE CHANGING NEW WORLD: NORTH AND SOUTH AMERICA as an exact substitute.)
THE CHANGING OLD WORLD, VI–VIII. 4 v; approx 1000 pp. 4-0352 ..... 51.20
LEARNING ABOUT LATIN AMERICA. VI–VIII. 3 v; approx. 480 pp. 4-1227 ..... 24.90

SCIENCE

In laboratory experiences, the visually-handicapped student might work with a partner. In cases of demonstration and experimentation, either the teacher or a partner should be sure that the partially-sighted student is given a step-by-step description of the proceedings.

Large print science books are also available.

Tactual equipment may be procured from supply houses, and many common materials may be used to demonstrate. The student should be encouraged to ask for more detailed explanations when necessary, and to seek out demonstration materials for himself to indicate his understanding of the subject material. Plastic models are now available and can be most helpful in biology classes.

Science (Physical)

*NEW LAIDLAW SCIENCE PROGRAM, THE
*MODERN SCIENCE. Smith, et al. Laidlaw, 1970 (1971)
*Level Two II. 22 pt. 1 v; approx. 210 pp. 4-1450 ..... $10.60
*Level Three III. 18 pt. 1 v; approx. 240 pp. 4-1451 ..... 11.70
*Level Four IV. 18 pt. 2 v; approx. 470 pp. 4-1452 ..... 23.40
*Level Five V. 18 pt. 2 v; approx. 470 pp. 4-1453 ..... 23.40
*Level Six VI. 18 pt. 2 v; approx. 470 pp. 4-1452 ..... 23.40
BIOLOGICAL SCIENCE: AN INQUIRY INTO LIFE; 2nd ed. Moore. Harcourt (BSCS) 1968. (1969) X:
Text–7 v: approx. 1600 pp. 4-1130 ..... 105.00
Student Laboratory Guide–3 Pamph; approx. 574 pp. 4-1131 ..... 29.70
CONCEPTS IN SCIENCE: 3. Brandwein, et al. Harcourt, 1966 (1969)
(Detroit Pub. Schools) III. 2 v; approx. 365 pp. 4-0393 ..... 18.00
READER'S DIGEST SCIENCE READERS. Branley, RDA:
Green Book–1963 (1968) III Pamph; 116 pp. 4-2209 ..... 4.60
Orange Book–1964 (1968) IV. Pamph; 112 pp. 4-2210 ..... 4.60
Blue Book–1961 (1969) V. Pamph; 148 pp. 4-2207 ..... 5.75
Red Book–1962 (1969) VI. Pamph; 140 pp. 4-2208 ..... 5.75

Philosophy and Psychology

FACTS ABOUT NARCOTICS AND OTHER DANGEROUS DRUGS. Vogel. SRA, 1967 (1969)
VII–XII. Pamph; 92 pp. 4-0622 ..... $ 5.00
PSYCHOLOGY. Engle and Snellgrove. Harcourt, 1969 (1969)
XI–XII. 4 v; approx. 1150 pp. 4-2190 ..... 66.60

WRITING

Every partially-sighted student should learn to type at as early an age as possible and this training may start as early as the second or third grade. The use of a portable typewriter is very valuable since it can be carried from one class to another. Typing instructions records are available to supplement the teacher's instructions. These records can be used with the Talking Book machine and the partially-sighted student can use the machine with the earphone attachment for individual instruction. Some teachers, however, have utilized these records for general class instruction and found them to be very practical. In addition, using the record for the class tends to minimize the specialized instruction for the partially-sighted student. A typewriter, particularly one with bulletin type, is also available for the partially-sighted student. The touch typing method should be used in all cases. Typing instructions are available on records and in large print books.

It is beneficial for the partially-sighted student to use larger-than-average handwriting, and it is also helpful to him if his teacher writes large and legibly. Pencils with thick, soft lead are recommended for contrast, along with the Flo-Master type pen with a felt tip, the ballpoint pen with a medium point and black filler, or a similar type pen or pencil. Non-glossy, cream-colored paper is suggested. If the paper is lined, light-green lines are used, spaced about ¾" to 1" apart. This paper is commonly called "Sight-conservation paper" or "Sight-saving paper."

Crowded blackboards and charts should be avoided. Thick, white, soft chalk for a heavy line is desirable.

**It is suggested that the amount of copy work for partially-sighted students be limited.*

The APH publication "Sources of Materials for the Partially Sighted" has been replicated here because it is of much value to the teacher who wishes to diversify the program and materials used by her students.

Commercial Subjects

Typing is a very valuable subject for the partially-sighted pupil and it can be considered essential to their training program regardless of their vocational objective. Typing instruction books in large type are available. Touch typing is mandatory. The keys should be covered during instruction and practice periods to prevent dependence on vision if necessary. Typing can be a vocational as well as a practical tool for a partially-sighted student; consequently a demanding course is desirable. As much work as possible should be done with dictaphones or similar machines.

Commercial subjects should be restricted generally to those *not* demanding close eye work, but a background in general office practice is helpful to a student who might use only typing in a vocational setting.

INDUSTRIAL ARTS

Partially-sighted students should be encouraged to participate in shopwork programs. For the beginner, most activities performed in the woodworking shop such as the use of handtools, including rip and crosscut saws, coping and keyhole saws, eggbeater drill, both jack and block planes, spokeshave, and similar tools can be handled with minimum risk.

The four-point safety pattern should be kept in mind by the instructor in introducing a partially-sighted student to power machine tools. These four points are:

1. APPROACH–Advance to the machine with the hands low so as to avoid moving parts.
2. SAFE PATH TO CONTROLS–Learn a safe method of reaching switches so as not to expose arms of fingers to moving parts.
3. POINTS OF OBSERVATION–Determine a spot where it can be learned if the tool is moving and if so, in what direction.
4. DETERMINE PROGRESS OF WORK–Learn how cutting is progressing, either by sound or pressure on handle.

With these points in mind, the more advanced student can operate circular saws with ease and safety. Partially-sighted students are very capable of advancing into a machine shop training program. With the application of the four-point safety program, plus the teaching of regular safety precautions on these machines, students have safely and efficiently learned to operate such power tools as the engine lathe, the shaper, the power hacksaw, the radial drill, bench lathe and the surface grinder. In fact, almost every power tool is approved except the cyclindrical grinder and possibly the bench grinder. It should be noted that it is not likely that a partially-sighted person will ever become a fully qualified machinist, but a job as a machine operator is well within the realm of possibility.

HOME ECONOMICS

Participation of the visually handicapped student in sewing, cooking homemaking and child care classes should be encouraged. Sewing guides for use on electric sewing machines are available through the American Foundation for the Blind catalog. Adapted cooking equipment (AFB Catalog) may facilitate work in the kitchen; however, skillful supervision is important when the student is cooking, cutting meat and vegetables or cleaning up the kitchen. Encourage the student to type menus.

ART

Activities not requiring close eye work are recommended. Some such activities are clay modeling, finger painting, paper-mache and wire-sculpture, large form

art work such as murals and tracing. If special periods of industrial arts or other handwork are available, it might be well to add these to the curriculum for the partially-sighted student.

FOREIGN LANGUAGES

Much oral work is indicated in the study of any foreign language. The use of Talking Book or commercial records is helpful for purposes of pronunciation.

Texts are available in large print.

The student should be encouraged to keep notebooks for vocabulary and grammar for this will facilitate study and review. In some cases, supplementary help may be provided.

MUSIC

Most visually handicapped students enjoy music. Participation in band, chorus and music trips should be encouraged.

Large type music may be ordered from:

Boston Music Company
116 Boylston Street
Boston, Mass. 02116

G. Schirmer, Inc.
609 Fifth Avenue
New York, New York 10017

National Aid to the Visually Handicapped
3201 Balboa Street
San Francisco, Calif. 94121

Library of Congress
Division for Blind and Physically Handicapped
Washington, D.C. 20542

Mills Music, Inc.
1619 Broadway
New York, New York 10019

PHYSICAL EDUCATION

The amount of participation in physical education depends upon the specific visual difficulty and the medical authorities serving the child recommends. Doctor's restrictions should be carefully observed. With the doctor's permission, the partially-sighted student may take part in a variety of games and activities. When it is felt that direct participation in certain activities might be unsafe or harmful, this student may be given a part such as score keeper or equipment manager.

Teachers are encouraged to give the visually handicapped child opportunities to participate. If possible, the visually impaired student should be integrated into the regular physical education class. The student knows better than anyone the extent of his limitations and will work to the limit of his ability with encouragement. The class should be made aware of his limitation and thus taught to cooperate and to understand if his performance is poor.

DO NOT LET HIM SIT.

Some sports in which such a student may do particularly well are tumbling, swimming, gymnastics, wrestling, track and field events. Dancing is also an area where there should be little difficulty with adequate explanation of the steps.

Work on the trampoline, swimming, shot-put, running and jumping events, and cross-country running are other recommended activities.

Activities with small groups my be desirable.

HOMEWORK

The visually-handicapped student is responsible for homework assignments which can be done with Talking Book, taped material, or large-type books. Written assignments can be typed or written in longhand.

EXTRA-CURRICULAR ACTIVITIES

The partially-sighted student should be encouraged to participate in extra-curricular activities. Group activities, dramatics, debating, language clubs are some practical outlets that might be utilized. Attendance at dances, sports games and similar events should be encouraged.

SUGGESTIONS FOR WORKING WITH THE PARTIALLY-SIGHTED STUDENT

Try to determine the amount and kind of vision in the particular case and how well it is being used.

Encourage independent decision about asking for help, granting permission to move about the room or go to the board without special permission. However, self-discipline in not abusing this privilege should be developed.

Utilize available equipment and aids for the particular needs in each case. Participation in classroom activities should be encouraged.

The student may, in some instances, require a longer time to complete his work than the sighted student, but if provision is made for this, the partially-sighted student can complete the class requirements and assignments and his marks can be awarded on the same basis as the sighted children in a regular class.

Participation in games, physical education and playground activities should be considered on an individual basis according to the amount of vision, his personal physical condition, the social needs of the students and the safety factors involved in the particular situation.

The following pages provide information concerning the procedure for the procurement of large print textbooks from the Textbook Library for the Blind and the form necessary for the procurement of these items.

Explanatory Notes

1. All requests to borrow large print texts should be made directly to:

   Mrs. Susan J. Meyer, Librarian, Textbook Library for the Blind, 7725 North College Avenue, Indianapolis, Indiana, 46240.
2. It is necessary that either the student's principal or teacher make all requests for books and materials. The library cannot accept requests from parents or other individuals.
3. If the books and materials ordered are available, they will be shipped free of charge to the visually handicapped student's principal or teacher.
4. In this catalog the titles are arranged alphabetically according to school subject. Be sure to indicate on the order blank that the books ordered are *large print.*
5. Any visually handicapped child in need of large print or Braille books is eligible to receive materials.
6. Books and materials received by schools through the *Federal Quota System* must be sent to the Textbook Library when they are no longer is use. They may be shipped free of charge by writing "Free Educational Matter for the Blind" at the top right-hand corner of the package.
7. It is requested that the books and materials borrowed from the Textbook Library be returned as soon as the student no longer requires their use or at the end of the school year, whichever comes first. If the books are to be retained for the following school year, a letter indicating such intention should be sent to the library by June 1st.
8. You may return books and materials to the Textbook Library for the Blind postage free by using the special return mailing label provided by the library.
9. Specific questions about obtaining Braille and large print books through Federal Quota may be directed to Bill J. Duckworth, State Division of Special Education, Room 108, State Office Building, Indianapolis, Indiana, 46204.
10. For materials not listed in this catalog or available through Federal Quota, a request for a source from which the materials may be borrowed or purchased may be directed to Mrs. Meyer at the address in Item No. 1. Requests for fall usage *should be in by the previous February* to ensure a prompt answer.

TEXTBOOK AND EDUCATIONAL MATERIAL REQUEST

Textbook Library for the Blind
7725 North College Avenue
Indianapolis, Indiana 46240
Mrs. Susan J. Meyer

County _____ Date _____

School Corporation _____

Name of School Building _____

School Address _____
Street or R.R. City Zip Code

Name of Teacher or Principal Requesting Book _____

Name of Student for Whom Books Are Requested _____

Indicate Approximate Date by Which books Will Be Returned to Library _____

NO. OF COPIES	LG. PRINT, BRAILLE OR TANGIBLE	TITLE AND AUTHOR	PUBLISHER AND DATE	GRADE

(Use reverse side side if more space is needed)

I will return all books and materials loaned by the Textbook Library for the Blind when they are no longer being used.

Signed _____
Principal or Teacher (Indicate which)

NO. OF COPIES	LG. PRINT, BRAILLE OR TANGIBLE	TITLE AND AUTHOR	PUBLISHER AND DATE	GRADE

In the publication "Sources of Materials for the Partially Sighted" reference was made to the Bell and Howell Duopage Department. The following pages contain the information about and examples of the duopage process.

The Bell and Howell duopage process (two-sided xerographic enlargements produced from microfilm) enables them to blow up any book to a page width of 11" and a corresponding page height.

They have an entire catalog of books which can be enlarged in this manner which the teacher may send for at the following address: Bell and Howell, Micro Photo Division, Drawer "E," Wooster, Ohio 44691. Additionally, any book which is not listed in their catalog can be acquired for this purpose. The price for this service is $.10 per page, including a soft binding.

Publishers of books that are currently in print and even on the best seller list give Bell and Howell permission to produce copies in the enlarged format so the possibilities in this area are limitless.

Suggested Equipment for Partially Sighted Children

BOOKS – Publishers of books in 18 or 24 point type

Aid to Visually Handicapped
1963 McAllister St., San Francisco, California

Albert Whitman & Co.
560 West Lake St., Chicago, Illinois

Harcourt, Brace & Co.
838 Madison Ave., New York, New York

William Morrow & Co.
425 Fourth Ave., New York, New York

SUPPLEMENTARY BOOKS (larger than ordinary type)

King Company
4609 North Clark Street, Chicago, Illinois

Atomic Energy
Children's Press, Inc., Chicago, Illinois

Landmark Books
Random House, Inc.,
457 Madison Avenue, New York, New York

Life in America, Fideler Co.
31 Ottawa Avenue, Grand Rapids, Michigan

CHALK

Alpha (5/8" diameter) white
Webster-Costello Co., Chicago Heights, Illinois

Freast (1" diameter) white
American Crayon Co., Sandusky, Ohio

DICTIONARIES IN LARGE TYPE

Stanwix House, Inc.
3020 Chartiers Ave., Pittsburg, Pennsylvania
Funk and Wagnalls New College Standard Dictionary

Winston Dictionary for Schools

MAPS AND GLOBES

Beckley-Cardy Co.
1632 Indiana Avenue, Chicago, Illinois

George F. Cram Co.
Indianapolis, Indiana

Denoyer-Geppert Co.
5235 Ravenswood Avenue, Chicago, Illinois

Dobson-Evans Co.
Columbus, Ohio

Modern School Supply Co.
Goshen, Indiana

Rand McNally & Co.
536 S. Clark St., Chicago, Illinois

Outline Study Maps

Stanwix House
3020 Chartiers Avenue, Pittsburgh, Pennsylvania

Music

Boston Music Co.
116 Boylston Street, Boston, Massachusetts

The Charles H. Hansen Publishing Co.
119 West 57th Street, New York, New York

Mills Music Co.
1619 Broadway, New York, New York

Theodore Presser, Music Publishers
Bryn Mawr, Pennsylvania

Paper

Sight-Saving Paper (lined if desired)
The Diem & Wing Paper Co.
Gilbert Avenue, Viaduct, Cincinnati, Ohio

Sight-Saving Paper (lined)
American Printing House for the Blind
1839 Frankfort Avenue, Louisville, Kentucky

Pencils and Pens

Zebco Primary Mechanical Pencil (with large, soft lead)
Zaner-Bloser Co.
612 No. Park Street, Columbus, Ohio

Advanced Flo-Master (Ad 22A), felt tip
Cushman and Dennison Manufacturing Co.
Carlstadt, New York

Esterbrook Drawing & Lettering Pen No. 1; fountain pen with #2284 point
Esterbrook Pen Co.
350 Fifth Avenue, New York, New York

Marsh Felt-Point Pen
77 Marsh Stencil Machine Co.
Belleville, Illinois

Records, Record Catalogues, and Film Strips

American Printing House for the Blind
1839 Frankfort Avenue, Louisville, Kentucky
(Recorded Educational Aids to Learning 1957 Catalogue of tapes)

Audio Classroom Services
323 S. Franklin Street, Chicago, Illinois
(Catalogue of dramatized record production. . .to be fitted into every day work of a school)

Educational Record Sales
153 Chambers Street, New York, New York
Phonograph Records for Classroom and Library (K to Grade 9)

Educational Services
1730 Eye Street, N.W., Washingtin, D. C.
Listing of Educational Recordings, Filmstrips and Equipment for more Effective Learning

Enrichment Records
20 East 8th Street, New York, New York
(Many Landmark books recorded)

Greystone Corp.
100-6th Avenue, New York, New York
Record Outline for Curriculum Planning

RCA Victor; Scott-Foresman Series of 78RPM, Vinylite, Records for "listening" training.

Scott Foresman Co.
1900 Politt Drive, Fairlawn, New Jersey
Sounds Around Us; On Poetry (records)

Seat Work (Large Type)

First Grade Seat Work for Duplication
Hayes Publishing Co., Wilkinsburg, Pennsylvania

Help Yourself Series–Numbers
Whiteman Publishing Co., Racine, Wisconsin

Numbers, Creative Publishing House
P. O. Box 28, Oxford, Ohio

Phonics cards: "Stand Up–Sound Off"
Miss Nelle Orebaugh
130 Lechner Avenue, Columbus, Ohio

E. W. Dolch Word Study (1) Vowels (2) Consonants
Garrard Press, Champaign, Illinois

Dolch Word Picture Cards, 18 point type
Hart-Vance Co.
17th and Delmare Blvd., St. Louis, Missouri

Tangible Mathematics
Creative Playthings
5 University Place, New York, New York

Tests – Large Type

Stanford Achievement Test, Form J (Primary through Advanced)
Kelley, Madden, Terman and Ruch, American Printing House for the Blind
1839 Frankfort Avenue, Louisville, Kentucky

Typewriters with Large Type

Remington No. 17 with Bulletin Type No. 48

Royal, Large Bogue; Ampli type

Smith Corona, Inc.; Bulletin Caslon Type No. 27

Underwood Bulletin Type, Pitch No. 6 Upper and Lower Case

Most typewriters are now available in electric models too. Use heavily inked ribbon. Keyboard charts, poster size, available from manufacturers.

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What About Your Child's Vision?
A report reprinted from Visual Digest Magazine
(Spring 1950)

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The Education and Health of the Partially Seeing Child
New York; Columbia University Press, 1959

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State of Georgia
Education Department
Atlanta, Georgia

Jones, John W.
The Visually Handicapped Child at Home and School
Washington; U. S. Department of Health, Education and Welfare, Bulletin No. 39. 1963. Blind Children, Degree of Vision, Mode of Reading, U. S. Department of Health, Education and Welfare, Office of Education, Bulletin No. 24 1961

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Education of Visually Handicapped Children, Bulletin 1951. No. 20, United States Government Pringint Office, Washington, 1951

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National Organizations

American Academy of Pediatrics
1801 Hinman Avenue
Evanston, Illinois 60204

American Foundation for the Blind, Inc.
15 West 16th Street
New York, New York 10011

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

American Optometric Association
4030 Chouteau Avenue
St. Louis, Missouri

American Public Health Association, Inc.
1740 Broadway
New York, New York 10019

American Academy of Ophthalmology and Otolaryngology
15 Second Street, S.W.
Rochester, Minnesota 55901

American Association for Health, Physical Education and Recreation
1201 Sixteenth Street, N.W.
Washington, D. C. 20036

Association of Educators of the Visually Handicapped
1604 Spruce Street
Philadelphia, Pennsylvania 19103

Council for Exceptional Children
Division for Visually Handicapped
(Blind and Partially Seeing)
Jefferson Plaza, Suite 900
1499 Jefferson Davis Highway
Arlington, Virginia 22202

Office of Education
Bureau of Education for the Handicapped
Washington, D. C. 20025

Office of Social and Rehabilitation Services
Washington, D. C. 20201

Library of Congress Division for the
Blind and Physically Handicapped
Reference Department
Washington, D. C. 20542

National Health Council
1740 Broadway
New York, New York 10019

National Institute of Neurological
Diseases and Blindness
National Institutes of Health
Bethesda, Maryland 20014

National Center for Chronic Disease Control
Neurological and Sensory
Disease Service Program
4040 North Fairfax Drive
Arlington, Virginia 22203

National Society for the
Prevention of Blindness, Inc.
79 Madison Avenue
New York, New York 10016

U. S. Department of Health, Education, and Welfare
Children's Bureau
Washington, D. C. 20201

Indiana Agencies

Indiana Agency for the Blind
536 West 30th Street
Indianapolis, Indiana 46208

Home teachers and counselors acting in advisory capacity to parents and teachers. Some special instruction for teachers. College and vocational training available to qualified, legally blind students. Job placement service.

Service for the Blind and Physically Handicapped
Indiana State Library
140 North Senate Avenue
Indianapols, Indiana 46204

Lending agency for Braille and Talking Books. Materials also in print suitable for teachers and parents.

Office of the State Superintendent of Public Instruction
Division of Special Education
State House
Indianapolis, Indiana 46204

The Indiana State School for the Blind
7725 North College Avenue
Indianapolis, Indiana 46204

Special programs in local school corporations.
Contact the Superintendent of Schools.

Textbook Library for the Blind
7725 North College Avenue
Indianapolis, Indiana 46240
Lending library of textbooks in Braille and large print

Exceptional Pupils
Special Education
State Superintendent of Public Instruction

Vocabulary Relating to the Eye

ACCOMMODATION – The adjustment of the eye for seeing at different distances, accomplished by changing the shape of the crystalline lens through action of the ciliary muscle, thus focusing a clear image on the retina.

ALBINISM – An hereditary loss of pigment in the iris, skin and hair; usually associated with lowered visual acuity, nystagmus and photophobia, and often accompanied by refractive errors.

AMBLYOPIA – Dimness of vision without any apparent disease of the eye.

AMBLYOPIA EX ANOPSIA – Dimness of vision due to disease of the eye; "Lazy Eye Blindness."

ANISEIKONIA – A condition in which the ocular image of an object as seen by one eye differs in size or shape from that seen by the other eye.

ASTHENOPIA Eye fatigue caused by tiring of the internal or external muscles.

ASTIGMATISM – Refractive error which prevents the light rays from coming to a single focus on the retina because of different degrees of refraction in the various meridians of the eye.

BINOCULAR VISION – The ability to use the two eyes simultaneously to focus on the same object and to fuse the two images into a single image which gives a correct interpretation of its solidity and its position in space.

BLEPHARITIS – Inflammation of the margin of the eyelids.

BLINDNESS – In the United States, the legal definition of blindness is: central visual acuity of 20/200 or less in the better eye after correction; or visual acuity of more than

20/200 if there is a field defect in which the widest diameter of the visual field subtends an angle distance no greater than 20 degrees. Some states include up to 30 degrees.

C, CC (CUM CORRECTION) – With correction – wearing prescribed lenses.

CATARACT – A condition in which the crystalline lens of the eye or its capsule or both become opaque, with consequent loss of visual acuity.

CENTRAL VISUAL ACUITY – Ability of the eye to perceive the shape of objects in the direct line of vision.

COLOR DEFICIENCY – Diminished ability to perceive differences in color – usually for red or green, rarely for blue or yellow.

CONCAVE LENS – Lens having the power to diverge parallel rays of light; also known as diverging, reducing, negative, pyopic or minum lens denoted by the sign - - (minus).

CONGENITAL – Present at birth.

CONJUNCTIVA – Mucous membrane which lines the eyelids and covers the front part of the eyeball.

CONJUCTIVITIS – Inflammation of the conjunctiva.

CONTACT OR CORNEAL LENSES – Lenses so constructed that they fit directly on the eyeball; used for the correction of vision in cases having a cone-shaped cornea and for cosmetic reasons. Corneal lenses are also used after cataract (lens) extraction to replace the lens removed from the eye. They provide less distortion and image size difference from the other eye than would spectacles.

CONVERGENCE – The process of directing the visual axis of the two eyes to a near point, with the result that the pupils of the two eyes are closer together. The eyes are turned inward.

CONVEX LENS – Lens having power to converge parallel rays of light and to bring them to a focus; also known as converging, magnifying, pyperopic, or plus lens, denoted by +.

CORNEA – Clear, transparent portion of the outer coat of eyeball forming front of aqueous chamber.

CORNEAL GRAFT – Operation to restore vision by replacing a section of opaque cornea with transparent cornea.

CRYSTALLINE LENS – A transparent, colorless body suspended in front of the eyeball, between the aqueous and the vitreous, the function of which is to bring the rays of light to a focus on the retina.

CYLINDRICAL LENS – A segment of a cylinder, the refractive power of which varies in different meridians; used in the correction of astigmatism.

DEPTH PERCEPTION – The ability to perceive the solidity of objects and their relative position in space.

-DUCTION – A stem word with a prefix to describe the turning or rotation of the eyeball (abduction - turning out, adduction - turning in).

DYSLEXIA – Inability to read which is apparently due to a neurological problem.

ENUCLEATION – Complete surgical removal of the eyeball.

EYE DOMINANCE – Tendency of one eye to assume the major function of seeing, being assisted by the less dominant eye.

FIELD OF VISION – The entire area which can be seen without shifting the gaze.

FLOATERS – Small particles consisting of cells or fibrin which move in the vitreous.

FOCUS – Point to which rays are converged after passing through a lens; focal distance is the distance traveled by rays after refraction but before focus is reached.

FOVEA – Small depression in the retina at the back of the eye; the part of the macula adapted for most acute vision.

FUSION – The power of coordinating the images received by the two eyes into a single mental image.

GLAUCOMA – Increased pressure inside the eye; "hardening of the eyeball," caused by accumulation of aqueous fluid in the front portion.

IRIS – Colored, circular membrane, suspended behind the cornea and immediately in front of the lens. The iris regulates the amount of light entering the eye by changing the size of the pupil.

JAEGER TEST – A test for near vision in which lines of reading matter are printed in a series of various sizes of type.

LENS – A refractive medium having one or both surfaces curved.

LIGHT ADAPTATION – The power of the eye to adjust itself to variations in the amount of light.

LIGHT PERCEPTION (L.P.) – Ability to distinguish light from dark.

LOW VISION AIDS – Optical devices of various types useful to persons with vision impairment.

MICROSCOPIC GLASSES – Magnifying lenses arranged on the principle of a microscope, occasionally prescribed for persons with very poor vision.

MYOPIA – Nearsightedness - a refractive error in which, because the eyeball is too long in relation to its focusing power the point of focus for rays of light from distant objects (parallel light rays) is in front of the retina. Thus, to obtain distinct vision, the object must be brought nearer to take advantage of divergent light rays (those from objects less than 20 feet away).

NEAR POINT OF ACCOMMODATION – The nearest point at which the eye can perceive an object distinctly. Varies according to the power of accommodation.

NEAR POINT OF CONVERGENCE – The nearest single point at which the two eyes can direct their visual lines, normally about three inches from the eyes in young people.

NEAR VISION – The ability to perceive distinctly objects at normal reading distance, or about 14 inches from the eyes.

NIGHT BLINDNESS – A condition in which the sight is good by day but deficient at night and in faint light.

NYSTAGMUS – An involuntary, rapid movement of the eyeball; it may be lateral, vertical, rotary or mixed.

OCULIST OR OPHTHALMOLOGIST – A physician – an M.D. – who specializes in diagnosis and treatment of defects and diseases of the eye, performing surgery when necessary or prescribing other types of treatment, including glasses.

OCULUS DEXTER (O.D.) – Right eye.

OCULUS SINISTER (O.S.) – Left eye.

OCULUS UTERQUE (O.U.) – Both eyes.

OPHTHALMOSCOPE An instrument used in examining the interior of the eye.

OPTIC ATROPHY – Degeneration of the nerve tissue which carries messages from the retina to the brain.

OPTICIAN – One who grinds lenses, fits them into frames and adjusts the frames to the wearer.

OPTIC NERVE – The special verve of the sense of sight which carries messages from the retina to the brain.

OPTOMETRIST – A licensed, nonmedical practitioner who measures refractive errors – that is, irregularities in the size or shape of the eye – ball or surface of the cornea – and eye muscle disturbances. In his treatment the optometrist uses glasses, prisms and exercises only.

ORTHOPTIC TRAINING – Series of scientifically planned exercises for developing or restoring the normal teamwork of the eyes.

ORTHOPTIST – One who provides orthoptic training.

PARTIALLY SEEING CHILD – For educational purposes, a partially seeing child is one who has a visual acuity of 20/70 or less in the better eye after the best possible correction and who can use vision as his chief channel of learning.

PERIPHERAL VISION – Ability to perceive the presence, motion or color of objects outside the direct line of vision.

PRESBYOPIA – A gradual lessening of the power of accommodation due to a physiological change which becomes noticeable after the age of 40.

PROSTHESIS – An artificial substitute for a missing eye or other missing part of the body.

REFRACTION – Deviation in the course of rays of light in passing from one transparent medium into another of different density and/or determination of refractive errors of the eye and correction by glasses.

REFRACTIVE ERROR – A defect in the eye that prevents light rays from being brought to a single focus exactly on the retina.

REFRACTIVE MEDIA – The transparent parts of the eye having refractive power; cornea, aqueous, lens and vitreous.

RETINA – Innermost coat of the eye, formed of sensitive nerve fibers and connected with the optic nerve.

RETROLENTAL FIBROPLASIA – A disease of the retina in which a mass of scar tissue forms in back of the lens of the eye. Both eyes are affected in most cases and it occurs chiefly in infants born prematurely who receive excessive oxygen.

SAFETY GLASSES Impact-resistant; available for both adults and children with or without visual correction for workshop or street wear protection.

SCLERA – The white part of the eye – a tough covering which, with the cornea, forms the external, protective coat of the eye.

SLIT LAMP – Provides a narrow beam of strong light; often used with a corneal microscope for examination of the front portions of the eye.

SNELLEN CHART – Used for testing central visual acuity. It consists of lines of letters, numbers of symbols in graded sizes down to Snellen measurements. Each size is labeled with the distance at which it can be read by the normal eye. Most often used for testing vision at a distance of 20 feet.

STRABISMUS – Squint; failure of the two eyes simultaneously to direct their gaze at the same object because of muscle imbalance.

STREPHOSYMBOLIA – "MIRROR READING" – A disorder of perception in which objects seem reversed, as in a mirror. A reading difficulty inconsistent with a child's general intelligence, beginning with confusion between similar but oppositely oriented letters (d-b, q-p) and a tendency to reverse direction in reading.

TELESCOPIC GLASSES – Magnifying spectacles designed on the principle of a telescope; occasionally prescribed for improving very poor vision which cannot be helped by ordinary glasses.

VISION – The art or faculty of seeing; sight.