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Study to evaluate the effectiveness of the Marks Functional Vision Assessment for multihandicapped persons

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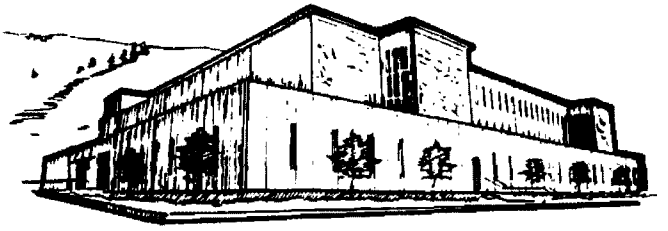

A STUDY TO EVALUATE THE EFFECTIVENESS OF THE MARKS FUNCTIONAL VISION ASSESSMENT FOR MULTIHANDICAPPED PERSONS

By

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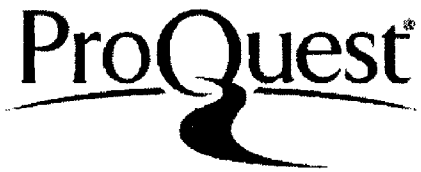

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I would also like to thank my wife Nancy who typed and edited this paper repeatedly and for her patience and understanding during this project. I would like to acknowledge the input from parents and teachers who assisted me with this study and the students who are the reason this assessment originated. In addition, I would like to thank June Miller, the Deaf-Blind Specialist from the Montana Office of Public Instruction, who provided moral support, resources, and guidance in the development of this assessment.

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CHAPTER 1

INTRODUCTION

Across the United States a special population of children requires a unique physical education program. This group is the visually impaired children in the public schools. With only 21,000 visually impaired children in public schools, less than one-tenth of one percent of the school population, these children are often neglected in the physical education program (Sherrill, 1986). The dictates of Public Law 94-142 specify that every child, regardless of handicap, is entitled to a physical education program suited to their abilities. Due to the rarity of their handicapping condition, the visually impaired students often fail to receive physical education programs adapted to their needs.

A subgroup of the visually impaired consists of children with more than one handicap designated as multihandicapped. The percent of multihandicapped students that are visually impaired as part of their disability is estimated to be 75-85% (Johnson et.al 1983 and Cress et. al 1982). The Montana Office of Public Instruction reported in 1988 that there were 273 multihandicapped children served in Montana (OPI, 1988).

Multihandicapped children are difficult to assess for vision due to poor reliability of vision tests for that population (Johnson et al,1983). Cress et al (1982) reported that 90% of the multihandicapped children were untestable in school vision screening tests. Buutljens and Aitken (1987) surveyed opthalmalogists and concluded that there was an inadequacy of

vision assessment tools for children with multiple impairments. In another phase of this study, researchers reported that teachers of visually impaired persons gave the highest ratings of confidence to vision tests consisting of structured measures of functional vision (Buutljens and Aitken, 1987). Lewis (1988) recommended that functional vision tests be utilized to assess how multihandicapped students use their vision as the results are more pertinent to the prescription of educational programs.

The author developed the Marks Functional Vision Assessment (MFVA) while working as a special education teacher. Pat Lewis, a vision specialist, provided materials as the foundation for the MFVA (Lewis, 1988). Several informal methods of vision assessment had been previously attempted unsuccessfully in the classroom setting. The author expanded on other vision assessment instruments by providing structured information about the functional vision of multihandicapped students. The resulting product was the MFVA, which has been used in the testing of approximately 30 total multihandicapped students within Missoula School District #1 (Montana) between 1988 and 1990.

The MFVA was designed to serve as an instrument to enable adapted physical educators and special educators to have information about the range of visual ability so that more appropriate education can be implemented for these children. The purpose of this study is to assess the reliability and validity of the MFVA as part of an ongoing professional practice.

Statement of the Problem

This research proposes to analyze the Marks Functional Vision Assessment (MFVA) by comparing it with the Texas Education Agency Functional Vision Assessment and field testing the instrument by evaluating students in the public schools.

The subproblems that will be assessed are as follows:

1) Is the MFVA valid?

2) How reliable is the MFVA?

3) How effective is the MFVA in providing information to educators and other clinicians on needs of low vision multihandicapped students?

Delimitations

The study will not be concerned with functional vision assessment of students who are older than fourteen or younger than three years of age.

The study will not assess visually impaired students with no other handicaps.

The author will not attempt to study multihandicapped students without visual impairments.

The study will not be concerned with an item analysis of the test itself.

The study will not include any totally blind or anoptic children.

The study will not randomly select students.

Assumptions

The first assumption is that information gained from a functional vision assessment is useful to educators working with visually impaired children.

The second assumption is that the author possesses the assessment skills needed to administer the visual assessment instruments.

The third assumption is that the test indicates the student's best effort unless otherwise noted in the conclusions.

Definition of terms

Functional vision assessment. This is an assessment of how a child uses vision that he or she possesses. It is a progressive developmental assessment of how residual vision is used in a variety of tasks. The test doesn't analyze visual acuity or the ability to see detail. It is not an examination of the eye or the student's disorder. A functional vision assessment is an objective information gathering tool to give assistance to special educators, adaptive physical educators, parents, home trainers, speech clinicians, and occupational and physical therapists about the visually-impaired children's functional abilities (Lewis, 1988).

Multihandicapped. According to the literature, there are many definitions of multihandicapped. For the purposes of this study, the operational definition chosen is any child who has more than one handicap. This closely matches the definition put forth in the Montana School Law and Administrative rules under Part B of

the Education for the Handicapped P.L. 94-142 (Montana OPI, 1985). For example, a student who is multihandicapped may be both mentally retarded and visually impaired or hearing impaired and visually impaired. For this study the students will be visually impaired and have some other disability as well.

Visually impaired. Any person whose vision is impaired in the area of reduced fields, acuity, or visual problems that interfere with the child's ability to function in an academic setting. This closely matches the definition put forth in the Montana School Law and Administrative rules under Part B of the Education for the Handicapped P.L. 94-142. It is useful to know the etiology but it is of primary importance in this study to measure function. The term partially sighted is often seen in the literature in the place of visually impaired (Buell, 1983)

Totally blind. Persons who are totally blind are defined as not having the ability to distinguish the presence of a bright light, such as the sun (Sherrill, 1986). This group of children will be excluded from the study. It is assumed that totally blind persons would not benefit from this assessment.

Multi-disciplinary team. This can be easily described by referring to the Montana School Law and Administrative rules under Part B of the Education for the Handicapped P.L. 94-142. The Child Study Team for a vision impaired person would include regular teacher and /or special education teacher, parent, administrative representative, vision consultant, school

psychologist and other professionals needed because of other disabilities that the student has.

Visual response domain. This area encompasses the visual tasks of newborns and one month old children that are primarily reflexive (Lewis, 1988). The MFVA assesses the visual response domain.

Visual motor domain. This area includes the visual tasks that show the integration of the eye muscular and neurological systems (Lewis, 1988). The MFVA analyzes skills in the visual motor domain.

Visual perceptual domain. This area will use visual perception skills or how the child processes the visual information and responds to the tasks (Lewis, 1988). This is one of the areas of organization of the MFVA.

Importance of the Study

This study will provide an evaluation of the MFVA which the author has used in the public schools for two years. The information gained will be used to modify the MFVA so that it will assist teachers of visually impaired students to devise strategies and techniques for working with these students. Information of the extent of visual impairment is often lacking especially for students in preschool and early elementary school. This assessment will provide information for the development of educational goals for professionals in a multi-disciplinary team.

The MFVA will collate information for the educator or allied health professional on how a student sees the world and moves in

relation to the student's perception. In language development, the test provides information on the student's ability to see others who are communicating in nonverbal ways. Several features, such as objects, concepts of names, and function of objects are frequently visual in self help and social situations. Educational goals that involve symbols such as writing and reading are primarily visual and an analysis of these symbols, such as reading and writing, in the child's visual field is of utmost importance. A functional vision assessment will provide valuable vision use information for a wide range of professionals working with visually impaired children.

CHAPTER II

REVIEW OF LITERATURE

The review of literature will include a survey of the normal development of vision in children, as well as functional vision assessments that are currently in use. In addition, it will include a survey of instructional strategies and techniques useful for stimulating visual skills.

Normal Visual Development

This functional vision assessment is based on a developmental sequence. Visual development can be broken into segments from reflexive eye movements to complex learned visual tasks. Normal visual development in children (Table 1) can be closely sequenced as they grow older (Ferrell, 1988; Lewis, 1988; and Bayley, 1969).

TABLE 1: NORMAL VISUAL DEVELOPMENT

--Birth to one month
  --Corneal reflex to touch
  --Pupil reaction to light
  --Regards or prefers human faces

--One to three months
  --Fixation ability is advancing
  --Focal distance lengthens to several feet
  --Tracks past midline

--Four to five months
  --Acuity nearly equal to adults
  --Visual memory to rescue dropped toys
  --Looks at object in hand and takes it to his mouth

--Seven to nine months
  --Vision becomes integrated with other activities

--Scribbles, catches a ball, reads books with pictures

--One month
  --Follows slowly-moving object
  --Tracks vertically and horizontally
  --Fixates at 7 to 10 inches
  --Cries real tears

--Three to four months
  --Head/hands used to reach at visual stimuli
  --Binocular coordination
  --Hand regard

--Five to seven months
  --Fixation fully developed
  --Responds to various facial expressions
  --Shifts visual attention between two objects
  --Eye-hand coordination developed
  --Fixates where objects disappear

--Nine to twelve months
  --Interest in very tiny objects
  --Tracks above gaze
  --Smooth visual pursuit- eyes only
  --Depth perception

At birth, reflexive behaviors are present in the eyes as well as the rest of the body. Corneal reflex is detected by slight touch of the cornea. A bright light shown on the face will cause the infant to close both eyes. Both pupils react to light by contracting quickly. The production of real tears by the tear ducts is a normal function during this developmental stage. By the end of a baby's first year, visual functioning is very similar to that of an adult (Ferrell, 1977).

Cratty (1986) noted that children fixate on human faces very early in life. From one to four weeks, a child regards or prefers human faces (Fantz, 1961). At one month of age, a child can follow slow moving objects and are beginning to track movement vertically and horizontally by eye movements only. The child also will be able to fixate for several seconds at a focal distance from 7 to 10 inches (Lewis, 1988).

At two-to-three months the focal distance lengthens to several feet. The child also should be tracking objects that pass horizontally past midline. This is a significant fact in the integration of motor and visual abilities on both sides of the body (Bayley, 1969). During the three-to-four month period, the child learns to integrate vision and motor activities. Head and hands are used to turn and reach toward visual

stimuli (Bayley, 1969). VanHofsten and Lindhagen (1979) reported that infants during the four-to five-month period begin to reach for stationary and moving objects with reasonable success. The integration of vision and motor activities is evident from three to four months and continues through life (Lewis, 1988).

The five-to-six month old follows moving people when in view. The infant's cognitive function has developed so that the child has the visual memory to rescue dropped toys. Visual acuity at this age is estimated to be near that of an adult (Ferrell, 1977).

At seven-to-eight months, a qualitative change occurs in how a child uses his vision. Vision becomes integrated into other activities in a very discriminating manner (Lewis, 1988). The child of this age are capable of using hands to scribble with markers or crayons and is looking at pictures in books. He puts two objects together such as a 2-piece puzzle, nesting boxes, or puts small objects into a cup or bowl (Stillman et al, 1978).

At 12 months the child has the visual acuity of an adult for both near and far vision (Lewis, 1988 and Cratty, 1986).

Research on the visual development of children after one year is very limited, primarily because the

vast majority of our visual development has taken place before this time. According to Smith (1966), by five years of age, many children evidence a number of independent perceptual abilities which contribute to their ability to deal with visual objects moving through space.

Existing Functional Vision Assessments

Seven different vision assessments were found in the literature. Some, such as Bischoff (1977) and Roessing (1982) were identified for persons with only visual handicaps. These provide information in school related skills such as reading and writing as well as independent mobility. Other information gathered by these instruments included independent eating and cooking abilities. This data fails to be useful information for a majority of multihandicapped clients because many of them fail to reach this level of independent performance.

Two of the vision assessment instruments reviewed were designed for deaf-blind persons (Stillman, 1978; Sailor, 1980). They were devised to meet the needs of children that were also hearing impaired. Many of the strategies and the information found in these tools were very applicable to the deaf-blind population. The data collected on visual response and visual motor abilities were especially useful for educators.

Buutljens and Aitken (1987) administered test items from standardized vision tests to students with or without vision impairments but practical information was not provided for multihandicapped clients.

Lewis (1988) demonstrated a functional vision assessment organized around the concept of three general areas: visual response skills, visual motor abilities, and visual perception skills. Emerging skills in children were added with reference to visual developmental scales. The organization described by Lewis was the basis for the development of the functional vision assessment in this study.

Use of Functional Vision Test Items

Gothelf (1980) stated that the nature of a functional vision assessment is to determine a student's abilities and limitations. The student's results from the assessment indicate in what areas the student will need instruction. This is a pragmatic approach to establish classroom activities.

Examples of teaching strategies for visually impaired clients were included with several assessments. (Texas Education Agency, 1984; Roessing, 1982; Sailor, et al, 1980; Langley & Dubose, 1976; Stillman et al, 1978; Lewis, 1988). The Functional Vision Evaluation from the Texas Education Agency (FVE) consists of an assessment section and a section that

lists specific strategies to teach the visual skills in which the student is deficient (Texas Education Agency, 1984). Examples of functional uses of the FVE include environmental considerations and classroom organization. Specific functional uses recommended for multihandicapped and very young children include motivating visual events, posture or position for the best use of vision, types of toys or lights to try, as well as ways to stimulate cognition, perception, and hearing.

Vision stimulation is the instructional technique that is needed by students who have very low vision or have needs for teaching in the area of visual response. Lewis (1988) noted that vision stimulation consists of activities that captivate and interest the student to look or use their residual vision. The researcher used flashlights in a dark room and colored acetate sheets or foil mobiles near a light source to provide vision stimulation.

Visual motor skills are the next developmental level of instruction. Sailor (1980) discussed strategies for teaching specific target visual motor skills. He suggested visual motor skills be integrated with other curricular areas and paired with self help, motor, leisure, and social skills. He also stated that the teacher should determine when during performance of

the paired functional skill it is crucial to use the visual skill and define this as a critical visual moment. A number of researchers suggested the use of moving visual stimuli such as mobiles and bright colored balls attached to strings to stimulate visual motor skills (Lewis, 1988; Ferrell, 1977; Woods, 1979).

Visual perceptual skills are the third visual level of development (Lewis, 1988). Several authors provided suggestions for activities in this area (Sailor and Stillman, 1978; Morse, 1985). Gothelf (1988) recommended the use of discrepancy analysis by the teacher. A discrepancy analysis is used to identify routines and classify the activities the student's non- handicapped peers perform during the course of the day. The teacher then contrasts the patterns between handicapped and non-handicapped students, teaching the skill using task analysis.

The developmental visual skills are responsive to operant learning methods (Sailor et al, 1980). Reinforcement should be contingent on the visual component of behavior. Sailor recommended that visual skills not be taught in isolation but in a functional reinforcing manner that relates to other skill learning such as self help or prevocational skills (Sailor, 1980).

CHAPTER III

METHODOLOGY

Organization of MFVA

The MFVA is designed in sequences just as normal visual development occurs in children. The instrument is broken into three domains of visual development: visual response skills, visual motor skills and visual perceptual skills. A description of the specific test items is found on the Marks Functional Vision Assessment Guide (Appendix A). The final section of the test contains conclusions and recommendations for use of information obtained by the examiner.

Visual response domain. This area encompasses the visual tasks of very young children that are primarily reflexive (Lewis, 1988). The visual response domain consists of six tasks that are found in the normal visual development of newborn to two month-old infants. Two of these tasks are reflexive, the pupilary reflex and eye blink reflex. The domain also consists of observable objective movements of the eyes in response to visual stimuli provided by the examiner. These would include eye alignment and imbalance, visual field losses, peripheral field losses, and eye preference.

Visual motor domain. The second phase of the functional vision assessment consists of eleven visual tasks that show the integration of the eye muscles and neurological systems (Lewis, 1988). The MFVA evaluates the child's ability to localize, track, scan and converge/ diverge by holding puppets, small squeeze toys,

or penlights within the child's range of vision. Items are moved slowly from left to right, up and down, in and out, and in oblique angles. The evaluator notes whether the child locates an object efficiently and attends for at least 5 seconds.

Visual perceptual domain. The third section of the test uses visual perception skills or how the child processes the visual information and responds to the tasks (Lewis, 1988). The visual perceptual domain consists of sixteen tasks that measure how the child uses his vision to solve problems or complete motor tasks. Skills in this area are found in the six to twelve month range on a normal visual developmental scale (Lewis, 1988). Motor and cognitive development lag behind visual development and the visual perceptual domain more accurately measures how a child uses his vision (Cratty, 1986).

Conclusions and recommendations. The final section of the test is a summary of the student's performance, the examiner's conclusions and recommendations. A statement is included describing how the student performed on the test. Next are significant conclusions or findings concerning the student's visual functioning. Recommendations comprise instructional strategies and techniques that could be useful to the unique needs of the student. Finally, recommen- dations for further evaluation, such as ophthalmologist exams or follow-up vision assessments, are included.

Implementation of the MFVA. The MFVA is sequenced developmentally and each student starts at the beginning of the

test with the objective observable items found in the visual response domain. Because of vision defects, some students do not complete this domain, but each task in the visual response domain is assessed.

The second domain of visual motor tasks is similar to the visual response domain. It is also sequenced develop- mentally with the tasks found in an infant or young child first and progressing to tasks requiring more complex integration of ocular motor structures. Students are given an opportunity to attempt all tasks in this domain.

The third domain of perceptual skills is very dependent on the cognitive development of the student. Many of the simpler perceptual motor skills are also visual perceptual skills. For some test items the student is given credit if the teacher reports that the student consistently completes this task in a classroom setting. Many multihandicapped students do not complete the tasks in the visual perceptual domain.

The test progresses to the point that the student misses two or more tasks in a domain. At this point the test is terminated. A conclusion that further testing would be inappropriate is reached based on observation of the student's cognitive level and where the student's performance fits on a visual developmental scale.

Validity

The MFVA was analyzed to determine the validity of the instrument by 1) comparing it to the Functional Vision Evaluation from the Texas Education Agency (FVE), 2) field testing it using nine multihandicapped children across Montana, and 3) content validity as supported by statements of validity by three authorities in the field of vision assessment.

Comparison. The MFVA was evaluated by comparing it to the FVE (1984). The FVE was chosen because of the instrument's application to the multihandicapped population. Both the FVE and the MFVA were given to two students and the results were compared. Due to the nonstandard nature of functional vision assessments, a comparison was made based upon the student's placement on a visual developmental scale (Bayley, 1969). The test items of the MFVA and the FVE are found in Table 2.

Table 2: Test Items of MFVA and FVE

MFVA

I. Visual Response Domain
- A. Pupil reaction
- B. Alignment Imbalance
- C. Blink response
- D. Visual field loss
- E. Peripheral field loss
- F. Eye/ field preference

II. Visual Motor Domain
- A. Localization
- B. Eye contact
- C. Fixation
- D. Tracking
- E. Convergence
- F. Gaze Shift
- G. Scanning
- H. Accomodation
- I. Eye/hand coordination
- J. Eye/foot coordination
- K. Locate dropped object

III. Visual Perceptual
- A. Depth perception
- B. Visual pursuit
- C. Causality
- D. Object permanence
- E. Object concept
- F. Means/ ends
- G. Spatial orientation
- H. Matching/ classifying
- I. Shapes
- J. Colors
- K. Size
- L. Sequence story
- M. Figure ground
- N. Interpret picture
- O. Reading
- P. Writing

FVE

I. Physical Optic
- A. Visual Acuity
  - 1. Distant
    - a. commercial vision test/ acuity testing
  - 2. Near
    - a. blink response
    - b. commercial vision test/ near acuity
  - 3. Ocular motility
    - a. pupil response
    - b. convergence/ accomodation
    - c. tracking
- B. Field losses
  - 1. Field loss/ preference with objects
  - 2. Scanning
- C. Color deficiencies
  - 1. Commercial test for color blindness
  - 2. Test with objects

II. Visual perception
- A. Awareness/ attention to objects
- B. Discrimination (matching/sorting)
- C. Closure (Puzzles/ objects hidden)
- D. Memory (visual recall of hidden objects)
- E. Figure ground
- F. Depth perception
- G. Eye dominance
- H. Eye dominance
  - 1. Object use/ sequence story
- I. Eye/ hand coordination
  - 1. Container skills
  - 2. Throw/ catch ball
- J. Use of commercial visual perception tests

III. Indoor functioning
- A. Lighting
- B. Reading
- C. Writing
- D. Visual Aides
- E. Chalkboard
- F. Object identification
- G. Indoor Travel

IV. Outdoor vision functioning
- A. Light sensitivity
- B. Object detection
- C. Basic signs
- D. Depth perception
- E. Visual aides

The FVE had several categories that were judged not to be appropriate for the field test sample and were not used in the MFVA. These items from the FVE included:

a. Part I Visual Acuity: This area is not assessed directly by the MFVA. A visual acuity measurement is routinely requested from parents or the agency prior to the MFVA.

b. Part II Visual Perception, item D. Memory:
This requires a choice and verbal response. This is a higher developmental task than similar items on the MFVA. Several other items in Part II: Visual Perceptual required a verbal response. This is often an area multihandicapped clients have difficulty and is not related to the visual task (Johnson et al, 1983).

c. Part III Indoor Visual Functioning: Item A-4: Visual Aids: These activities are not tested in the MFVA. They are also in the scope of the Orientation and Mobility Specialist.

d. Part IV Outdoor Visual Functioning: These activities are not tested in the MFVA. They are also in the scope of the Orientation and Mobility Specialist.

The MFVA measures educational or school related functional vision tasks. The FVE is a more broad-based assessment that includes visual acuity and indoor and outdoor visual functioning. The FVE uses a verbal response in some test items and thus measures a higher functioning handicapped person than is intended to be assessed by the MFVA. Also, the FVE incorporates other

vision assessments such as Stycar Visual Acuity Tasks, Lighthouse Flashcards, and the Ishohara Color Blindness Test.

Field test. The MFVA was given to nine children, two boys and six girls, who are multihandicapped and visually impaired. The information gathered was shared with parents, educators, and other clinicians who work with the children. The data gathered was stored on a functional vision assessment form for each client tested.

Four of the students were identified as multihandicapped and four students, under six years of age, were classified non-categorical. This is an appropriate classification for young multihandicapped students. All nine students were multihandicapped as defined in this study.

Content validity. Validity was measured using content validity. A panel of three authorities in the field of vision assessment were selected and asked to review the MFVA. They each provided a statement that the MFVA did, in their professional opinion, measure functional vision in young multihandicapped persons. These persons included Patricia Lewis, a Vision Assessment and Orientation and Mobility specialist in Westminister, Colorado; Judy O'Toole, Vision Specialist for multihandicapped students at the Montana School for the Deaf and Blind in Great Falls, Montana; and Dr. John Salisbury, MD, an ophthalmologist who treats multihandicapped children who have visual disorders in Missoula, Montana.

Reliability

Reliability was established using test-retest reliability. Two students from the field test were selected for the test/retest. They were given the MFVA twice, approximately seven to ten days apart.

Effectiveness

A survey was developed to determine the effectiveness of the MFVA in providing useful or practical information to educators and other clinicians on the needs of low vision multihandicapped students. The survey was distributed to members of the Child Study Team that received information from the MFVA. A copy of the questionnaire is included in Appendix C.

CHAPTER IV

RESULTS

The MFVA was analyzed to determine 1) if it was a valid instrument, 2) if it was reliable and 3) if it is effective in providing information to other clinicians and educators on the needs of low vision multihandicapped students.

Is the MFVA a valid instrument?

The first subproblem was to determine if the MFVA was valid. Validity was determined by 1) comparing the results of the MFVA with the FVE using visual developmental scales, 2) field testing the instrument with nine multihandicapped students across Montana and 3) content validity as supported by statements of validity by three authorities in the field of vision assessment.

Comparison The MFVA was evaluated by assessing two students with both the MFVA and the Functional Vision Evaluation by the Texas Education Agency (FVE) (Texas Education Agency, 1984) and comparing the results. The MFVA and the FVE tested the areas listed in Table 3 in identical fashion.

Table 3: Identical test items of MFVA and FVE

Visual Response	Visual Motor	Visual Perceptual
Pupil Response	Localization	Spatial Orientation
Alignment/Imbalance Cover Test	Eye Contact	Shape
Blink Response	Fixation	Color
Visual Field/Peripheral Field	Tracking	Figure Ground
Eye Preference	Convergence/ Divergence	Reading
	Gaze Shift	Writing
	Eye Hand Coordination	
	Eye Foot Coordination	
	Mobility	

Assessment and conclusions reached by the MFVA and FVE analysis were similar in these areas:

acuity- document size and distance of objects
recognize persons across room
lighting preferences
preferred visual distance: close and distant
use of classroom visual aides- easel/ positioning

Two students from the field study, GD and WS, were assessed using both the FVE and the MFVA. The test items that were identical in both assessments (Table 3) were measured with similar test results for both students on the FVE and the MFVA. Visual developmental scales were used to compare the results. GD scored thirty-six to forty months on the visual developmental scale for both the MFVA and the FVE. Likewise, WS scored three to four months on the visual developmental scale using information from the FVE and MFVA. These findings support the assumption that the MFVA and FVE produce similar results.

Field test The MFVA was field tested with nine children who are multihandicapped and visually impaired. The data gathered were stored on a functional vision assessment form for each client tested. These reports are included in Appendix D. Results of this field test are shown in Table 4.

The information gathered in the assessments was shared with the child study team for each student. Students were placed on a visual developmental scale from three to sixty months. Functional uses of the MFVA for individual students were included in the report. Appendix D includes the specific functional uses for each student in the field test.

TABLE 4: SUMMARY OF FIELD TEST RESULTS

Student (Total=38)	Age	Handicapping Condition	Visual Developmental Level (in months)	Number of items Attempted on MFVA
MM	3	NC	12 months	24
KA *	5	NC	3-4 months	14
JA	5	NC	8-10 months	31
DK	6	NC	3-4 months	13
GD **	6	MH	36-40 months	34
MK	7	MH	5-6 months	31
SW **	9	MH	3-4 months	14
SH	10	MH	48-60 months	38
VC *	11	MH	5-12 months	20

*Reliability subjects **Validity subjects
NC- Noncategorical MH-Multihandicapped

Content validity Validity was measured using content validity. A panel of three authorities in the field of vision assessment were selected and asked to review the MFVA. Each person received a copy of the MFVA assessment guide (Appendix A), and two completed assessments from students SH and KA (Appendix D). Also

included was a cover letter explaining the MFVA and a request for them to return the validity statement (Appendix C). All three of the authorities in visual assessment returned statements of the appropriateness of the MFVA to measure the educational needs for multihandicapped/ visually impaired students. No written comments were received, but all three authorities when contacted by phone expressed support for the MFVA and indicated a desire to use it with multihandicapped visually impaired persons in their professional practice. Copies of the signed validity statements can be found in Appendix E.

How reliable is the MFVA?

The second subproblem was to determine the reliability of the MFVA. Reliability was established using test-retest reliability. The two students selected for test-retest were tested approximately seventeen days later with the MFVA. Student KA had similar results for all 13 items or a reliability of 1.0 for test/retest with the MFVA . The second student, VC, had the same results for 22 of 23 items or a reliability of .96.

How effective is the MFVA in providing information on the needs of low vision multihandicapped students?

The final subproblem was to determine the effectiveness of the MFVA in providing information to educators and other clinicians on the needs of low vision multihandicapped students. A survey was developed and distributed to child study team members that received information from the MFVA. Twelve surveys were sent out and eight surveys were returned. Six were from special

educators, one from a vision consultant, and one from a physical therapist. Copies of the completed questionnaires are found in Appendix F.

The compiled survey results (Table 5) showed that on a Likert scale of 1 (not at all useful) to 6 (very useful), respondents gave an average of 5.4 for practical nature of the MFVA. The respondents averaged 5.2 for confidence in the accuracy of the MFVA, where 1 was no confidence in the results and 6 was highly confident. An average of 5.6 was found on the 1 (not recommended) to 6 (highly recommended) scale for the willingness to recommend the MFVA for other visually impaired children statement.

TABLE 5: SUMMARY OF PERTINENT SURVEY RESULTS
n=8

Question	Range	Mean	Mode
1. Practical nature of information from MFVA	4-6	5.4	6
4. Level of confidence in accuracy of results.	3-6	5.2	6
6. Willingness to recommend MFVA for other visually-impaired children	5-6	5.6	6

The results of the survey indicated that recommendations were the most useful area of the MFVA. Seven out of eight persons in the survey reported that they had other sources of information regarding the child's vision functioning. Six of eight persons reported they changed their teaching strategies after receiving the results of the MFVA.

Comments on the form indicated support for the results and recommendations made in each report. The survey questionnaire received from the vision consultant included a criticism of the lack of information involving distance vision and the use of low vision aides in the MFVA. Because of the condensed form, the MFVA would appear to be more appropriate for a school-based assessment of multihandicapped visually impaired school age children than the FVE.

This survey indicates that the instrument was effective in providing useful or practical information for child study team members.

CHAPTER V

CONCLUSIONS

The study of the MFVA has been an extensive evaluation. The MFVA was compared to the FVE, field tested, and subjected to test-retest reliability.

Validity results were conclusive. The comparison of the FVE and the MFVA indicated that twenty test items were identical and five tasks obtained similar outcomes. The two subjects assessed by both MFVA and the FVE showed their results placed them identically on visually developmental scales.

The data gathered in the field study and supplied to professionals indicated the MFVA has functional use in its application to multihandicapped visually impaired students.

The measure of content validity is supported by all three members of the panel of authorities in the field of vision assessment. The professionals reviewing the MFVA expressed support in written and oral comments.

The test retest reliability of 1.0 for one subject and .96 for the other subject indicate a high reliability for the MFVA.

The survey results indicated that valuable information about how the visually impaired children use their vision was obtained from the MFVA. The assessment was strongly recommended by the professionals who received the results on their students. The survey also indicated that the persons who received the information from the MFVA were highly confident of the results.

The MFVA is very appropriate for the population of young multihandicapped persons. The MFVA fills a specific need that is not being met by current functional vision assessments. The review of literature showed that very few instruments are appropriate for multihandicapped visually impaired persons. Those currently in practice are not held in high confidence by professionals in the field (Buultjens and Aitken, 1987).

The MFVA is designed as a school based assessment. Sailor (1980) recommended that visual skills not be taught in isolation but be related to other learning such as self help or motor skills. He also stated that visual skills are responsive to operant learning methods. The recommendations from the MFVA support Sailor's paradigm and are appropriate for functional use in an educational setting.

The survey and field study support the use of the MFVA to assess the vision of multihandicapped persons, especially nonverbal and very low functioning individuals.

Further study in this area might include analysis of the instrument with persons fourteen years old and older who are multihandicapped. This would entail modification of some of the test items and use of more age appropriate materials.

A further recommendation is that a one-year followup of the students in the field study be completed to determine the following: 1) Were recommendations from the MFVA implemented? 2) Is improvement seen in student's visual development? 3) Are the

assessment results still accurate and useful to professionals working with visually impaired multihandicapped students?

The analysis of the MFVA has provide evidence that it is a valid, reliable, and useful instrument for professionals working with young multihandicapped and visually impaired children. Thus, a final recommendation is that the MFVA be used more extensively in the assessment of multihandicapped children as they progress through school so that teaching strategies can be implemented that stimulate vision deficiencies.

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Appendix A

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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name:_____

Date of birth:_____

Date of report:_____

Reason for Referral: _____

Other conditions present:_____

Etiology of Impairment:_____

Medications:_____

VISUAL RESPONSE:

Pupil Reaction: present absent weak light strong light

Direct penlight into child's eyes from 12" away and observe whether the pupils constrict, then dilate when the light is removed. Be sure to observe his eyes before shining the light as blind children often exhibit hippus, a continual constricting and dilating of the pupil.

Alignment/Imbalance:

1. Assessing the tendency of the eyes to deviate can be done by flashing a beam from a penlight into the child's eye's from 30" away. If the light is reflected simultaneously in the middle of each pupil, no deviation is present. If the reflection is centered on one pupil, but off-center in the other, some form of muscle imbalance is indicated.

2. COVER TEST: a. Shine light b.Cover one eye c. watch uncovered eye for movement from light immediately

Resists Eye Cover: ____left ____ right

Blink: defensive noise light movement

Place the child on his back and kneel behind his head. Pass your hand across his eyes, pause and repeat. A blinking reflex indicates some light perception and possibly some object perception

Visual Field Loss:

Assess the child's perception of light using a penlight. From 12" or closer flash the light and note whether he attends to it. The light should be flashed slightly above, below, to the left, and right of the child's face to determine the range of visual field. Note whether he falls to attend to the light in any plane.

Peripheral Field Loss:

Sitting behind the child, bring the light slowly into his right, then his left visual field. Continue in a vertical circle around the child's face, checking the child's vision in 6 or 7 locations. Note at which point he turns to look at the light. He should notice it when it is directly in line with the lateral portion of the eye or directly above or below the eyes. Attempt to get the student to look straight ahead as you do the test.

Eye/Field Preference:

1) Present the child with play objects of equal interest simultaneously in the right and left visual fields and gesture for him to touch them, switch their positions and repeat. Observe whether the child attends to a toy in only one position rather than both.
2) While holding a motivating toy 12" to 18" in front of the child's eyes, alternately cover each eye. Observe whether he resists having one or both eyes covered or if he remains indifferent to the covering. Children having limited or no vision in an eye will not mind having that eye covered but will strongly resist covering of the functional eye.

VISUAL MOTOR

Evaluate the child's ability to localize, track, scan and converge/diverge by holding puppets, small squeeze toys, or penlights within the child's range of vision. Move them slowly from left to right, up and down, in and out, and in oblique angles. Note whether he locates an object efficiently and attends for at least 5 seconds

Inappropriate Visual Behaviors:
(squinting, eye pressing, flicking, filtering)

Observe the child for any inappropriate visual behaviors such as light flicking with fingers or objects or eye poking.

Localization:

(20 sec) sounds lights objects faces movement

quiet attend head/eyes turn eyes independent

extreme R,L change body position

Eye contact, Persons, and Objects:

Does the student make eye contact with objects or persons?

Fixation:

global- looks out but fixates on nothing in particular
monocular- one eye in use only
biocular- both eyes, used separately
binocular- both eyes,used together
inspects self in mirror
intense fix on tiny object

Tracking Ability:

_horiz _vertical __rotary __diagonal
crosses midline?

Track Lower than Gaze: ___horiz ___vert

Convergence/ Divergence:
(in and out 4" to 18")

Gaze Shifts: (2 objects horizontal, near, far)
Hold two toys of equal interest approximately one foot apart in front of the child. Shake one, pause, then shake the other. Observe whether he shifts his gaze to the other toy.

Scanning: (more than 2)
Looks at 3 or more toys in a row 6-10" apart. Point to, shake or indicate somehow that the child should look at each toy.
Place three objects in front of him and watch to see if he shifts his attention from one toy to the next in line.

Accommodation:
Place one colorful toy at 30 inches and a second toy at 6". Have student alternately look at close and far objects. Check to see if student focuses on both objects by following pupil response.

Eye/Hand Coordination: __mid _up __down __ rotate right __left
Place small colorful quiet toy in a variety of positions in child's visual field. Say "get it" or "touch the _____."

Eye/Foot Coordination, Mobility
place objects such as a colorful ball near the child's foot and ask them to kick it. Observe the student as they move around the room and school, note walking skill level and any orientation skills.

Locate Dropped Object: ___present __absent ___distance
___peg or candy ___inch cubed blocks ___shape chips
While interacting with child, scatter small pegs or candies 1/4" in diameter, inch cubed blocks, counting bears or shape chips around child and encourage him to find them. Note the distance at which he most consistently attends to the various sized objects.

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
Does the child reach into or pour from a small container to get small objects?

Visual Pursuit: (Follows moving object)

Tap or pour blocks and pellets from containers in front of child. Note whether he looks at them as they tumble before him.

Causality:_____attends to scribble _____cause/effect

Scribble large circular motions with magic marker on white paper in front of child. Note whether he watches or attempts to take the marker. Use other cause/effect activities if needed

Object permanence (hidden object)

Give the child M & M's to hold, help him place them in a small box and shake them around. Take the box from the child and quickly remove the candies. Watch to see if he looks for the candies when you return the box.

Object Concept: _____books _____pictures

Give him a large colorful book to look at. Note whether he bends to look at the pictures or pats them. Does the student turn the pages?

Means/Ends:

Give the child a toy which has continuous action and attracts his attention. As he watches, push the toy out of his sight and note if he looks for the toy. Replace it before him without the motion and observe whether he attempts to reactivate it.

Spatial Orientation: _____puzzles _____nest _____stack
_____block designs ____beads ____pegs

Allow the child to work with each of the above. Note abilities and adaptions the child has made.

Matching/Classifying: ____object/object ___pix/obj _____pix/pix

Place small objects in front of the child and hand him, an object that is identical to one of the ones in front of him. Ask him to "find the same". If successful for 5 repitions, repeat for picture to object, and picture to picture.

Shape:

Have the student attempt to ID various shapes: triangle, circle, square, diamond, and rectangle. Use various objects, line drawings, and colored pieces of paper of different sizes.

Color: _____primary ____shades

Match, ID, find the same colors using 2 correct responses for each color. red, blue and yellow are the primary colors to start with.

Size: (find and identify)

Solid forms___ Outlines___ Outlines with detail____
Letters____ Words____

Sequence size:

Describe,then demonstrate, then ask the student to sequence 4 colored paper shapes from 1-3" in size.

Sequence story:
Tell a story and have the student put the 4 item picture story in sequence.

Figure/ground:
Have student identify 1-2" objects on a page of a book. The student should also find 1/4" objects of similar color on the table or floor.

Interpret pictures:
"What is happening in this picture?". Look at pictures in children's book and ask the child to explain the picture. Note the size of the details that the student attends to.

Reading:
Note the size of print the child can read. Note also the distance and position the student prefers for the material to be at. Does the student need a marker to hold the position on the page?

Writing:
Have the child write his name and the alphabet.If the child does not produce written letters yet, have the child attempt to copy vertical,horizontal, and diagonal lines. The student could also copy shapes made by the tester. Note also the distance and position the student prefers for the material to be at. Include the sample with the report if possible.

CONCLUSIONS/ RECOMMENDATIONS:

1) A statement about the students performance on the test.(ie. best effort? interaction with the examiner?)
2) Significant conclusions or findings in the test concerning the students visual functioning.(ie. field losses, or nystagmus.)
3) Recomendations include instructional strategies and techniques that would be useful to the individual student.
4) Recommendations for further evaluation such as opthamologist exam or followup vision assessments.

_____ _____

Ron Marks Date
Vision Assessment Specialist

Appendix B

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team PARTICIPANT ROLE_____

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

___Dr. report ___Other functional vision assessments
___School Nurse vision screen ___Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1	2	3	4	5	6
Not at all Useful					Very Useful

3. What parts were the most useful for your field?
___a. Assessment results
___b. Conclusions of assessment results
___c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1	2	3	4	5	6
No confidence at all					Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1	2	3	4	5	6
Not Recommend					Highly Recommend

Comments:

Appendix C

Validity Statement

The Marks Functional Vision Assessment developed by Ron Marks is, in my professional opinion, valid in its assessment of the educational needs of visually impaired/ multi-handicapped children.

_____	_____	_____
Signature	Title	Date

Appendix D

Ron Marks, BSRN, BA
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MARKS FUNCTIONAL VISUAL ASSESSMENT

NAME: DK

DATE OF BIRTH: 12/18/85

DATE OF REPORT: 12/19/89

Reason for Referral: IEP planning

Other conditions present: History of birth with low oxygen, developmentally delayed, non-categorical

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VISUAL RESPONSE:

Pupil Reaction: Both pupils reacted equally to strong light in both eyes. The examiner notes that hippus appeared to be exhibited during the exam.

Alignment/Imbalance: When each eye was covered independently, the other eye moved off of center. Nystagmus was noted and interfered with the ability to judge alignment of both eyes.

Resists Eye Cover: No resistance to eye cover, either eye.

Blink: Blink reflexes were seen to noise, bright light and movement. All stimuli, with the exception of sound, needed to be within 1-2 feet of KD in order for her to respond.

Visual Field Loss/ Peripheral Field Loss: KD responded to penlights in all visual fields and turned her head and made vocalizations. The light was about 12" from her.

Eye/Field Preference: She showed a definite field preference for just left of center on her left medial field.

VISUAL MOTOR

Inappropriate Visual Behaviors: No squinting, eye poking, filtering or flicking seen

Localization: She localized sound and objects. She turned her head and eyes and eyes independently to find objects like penlight and squeak toy at a distance of 12-14".

Eye contact, Persons, and Objects: She does not make eye contact with objects, but not with persons.

Fixation: Monocular fixation, using the left eye, was seen at a distance of about 5". She placed a small hand mirror on the side of her face.

Tracking Ability: Horizontal tracking was noted but was not smooth and she had difficulty crossing midline.

Track Lower than Gaze: No tracking lower than gaze, either vertical or horizontal.

Eye/Hand Coordination: KD moved her right hand and twisted her body to reach for a shiny 1" diameter object at a distance of about 6". She showed a 2-3 second delay in reaching for the object. She crawled to contrasting objects 1' in diameter at 5-6'.

The skills in the following test items were not appropriate for her abilities. This conclusion was reached based on observation of the student's developmental level as well as visual developmental scales.

Convergence/ Divergence:
Gaze Shifts:
Scanning:
Accomodation:
Eye/Foot Coordination, Mobility
Locate Dropped Object:

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
Visual Pursuit:
Causality:
Object permanence (hidden object)
Object Concept:
Means/Ends:
Spatial Orientation:
Matching/Classifying:
Shape:
Color:
Size:
Sequence size:
Sequence story:
Figure/ground:

Interpret pictures:
Reading:
Writing:

CONCLUSIONS/ RECOMMENDATIONS:

1. KD was observed working with two regular care-givers, as well as the examiner. A good sample of her visual behavior was seen.

2. KD's chosen visual distance is between 5-8". A wide variety of experiences can be provided in this range. I recommend that classroom staff explore increasing that distance to 12".

3. Visual stimulation activities should be continued with KD in all visual fields. Providing pleasurable non-threatening visual activities on a daily basis. These activities should not be continued beyond the point when KD becomes fearful or angry.

4. Use of adaptive computer software with switches would best be facilitated in a darkened room with the computer screen at a distance of 6-12".

5. KD's visual development when placed on a developmental scale would be approximately 3-4 months.

6. A list of appropriate vision stimulation activities is available on request. The classroom program incorporates excellent vision stimulation opportunities for KD.

8. The following suggestions for use with classroom materials, would make KD use her vision more efficiently:
   a. A dark blue placemat, possibly laminated, for use at meals to provide contrast and decrease glare.
   b. A consistent upright seating position in classroom as defined by PT/OT staff.
   c. Bright orange visual tag be placed on spoon, switch, and other small items that KD needs to locate in her environment.
   d. The use of a bright flashlight to indicate attention to toys or items in darkened areas.
   e. Provide opportunities for facial regard (the noting of faces in her environment) Examples include faces on toys, puppets, balls and small hand mirrors.
   f. Encourage grasping with use of light touch switch on flashlight.

8. I recommend a follow-up functional vision evaluation in about one year.

_____ _____

Ron Marks
Vision Assessment Specialist

Date

Ron Marks, BSRN, BA
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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: GD

Date of birth: 10/21/84

Date of report: 2/16/90

Reason for Referral: Child Study Team recommendation

Other conditions present: Spina Bifida

Etiology of Impairment: low visual acuity

Medications: none noted in the file

VISUAL RESPONSE:

Pupil Reaction: Pupils responded equally and reacted to light.

Alignment/Imbalance: Significant esotropia, more pronounced in the left eye.
Cover test: Not consistent,but it would appear that she maintained fixation when either eye was covered with little deviation if any.

Resists Eye Cover: No resistance to either eye being covered.

Blink: Blink reflexes to noise, light, and movement.

Visual Field Loss/ Peripheral Field Loss: No apparent visual field or peripheral field losses noted.

Eye/Field Preference: No preference shown for either eye or any visual field.

VISUAL MOTOR

Inappropriate Visual Behaviors: No rubbing, eye pressing, or flicking seen, although some eye squinting was noted as she became tired.

Localization: Quickly localized sounds, lights, objects and movement in all visual fields. She was also able to attend to quiet stimuli with eyes moving independently in extreme right and left visual fields.

Eye contact, Persons, and Objects: Quickly made eye contact with persons and objects.

Fixation: Inspected herself in a mirror and appeared to use binocular vision to fix on tiny objects.

Tracking Ability: Was able to track horizontally and vertically and cross midline. She was not able to smoothly track a rotary or diagonally moving object.

Track Lower than Gaze: Was able to track horizontally lower than gaze, but not smoothly.

Convergence/ Divergence: A smooth scan of an object moving from 18" to 4".

Gaze Shifts/Scanning: Easily shifted gaze between two and three objects.

Accomodation: Accommodation was demonstrated looking at a colorful objects, one at 30" and one at 6". With her glasses it was difficult to see her pupils, but she did the task.

Eye/Hand Coordination: A tennis ball thrown to her was trapped with her hands against her body 4/5 times.

Eye/Foot Coordination, Mobility Was able to easily maneuver her wheelchair around the classroom and in the halls.

Locate Dropped Object: Quickly noted objects, during the testing period, that dropped away from her onto the floor.

<u>VISUAL PERCEPTUAL</u>

Depth Perception/ Container Skills: Reached into and poured from a container to get small objects.

Visual Pursuit: Did not appear to follow 1/2" diameter M & M's poured from a small cup.

Causality: Attended to marks made on paper by examiner and by report does cause and effect activities in the classroom.

Object permanence (hidden object) Quickly noted M&M'S that were hidden in a small container with a lid and "rescued" them.

Object Concept: Turned pages in a book and identified 1/16" objects in book "boys glasses, spoon, cup, and dog."

Spatial Orientation: Easily completed an 8 piece puzzle, 3/5 nestling boxes, and stacked 3 1" blocks.

Shape: Identified triangle, circle, square.

Color: Inconsistent for all primary colors.

Figure ground Easily able to find same color M&M's on carpet. 10/10 correct. She also located 1/8" size objects in pictures in a book.

Sequence size: Could not identify "biggest or smallest".Did not appear to understand the sequence task.

Sequence story: Was not able to sequence a 4 item picture story. "Hey Diddle, Diddle"

Figure/ground: Was able to identify 1/16 and 1/4" objects in background of picture.

Interpret pictures: Was able to interpret story in reading book by looking at 1 to 2" color pictures.

Reading: Was not able to identify the letters of alphabet, but by report recognizes the names of classmates made with 1" letters at 10 feet.

Writing: See writing sample.

CONCLUSIONS/ RECOMMENDATIONS:

1. GD wore her glasses during the exam and appeared to give her best effort.
2. Her preferred distance is 6-8" for close vision.
3. There was significant bilateral esotropia, more pronounced in the left eye, but no distinct eye preference or visual motor difficulties.
4. By report, GD recognized the teacher and the speech clinician sitting quietly 20-30 feet away in a multi-colored classroom.
5. Her visual perceptual skills place her at the 3-4 year old visual developmental level.
6. Her visual impairment does not appear to impact her current educational program.
7. I recommend that a visual acuity or ophthalmologist exam report be placed in her file annually.
8. A tilted surface or easel might be useful for writing and reading activities. It should have a 3-4" rise on a 1-2' surface.

_____ _____

Ron Marks Date

Vision Assessment Specialist

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MARKS FUNCTIONAL VISUAL ASSESSMENT

NAME: JA

DATE OF BIRTH: 12/21/83

DATE OF REPORT: 11/16/88

Reason for Referral: IEP planning

Other conditions present: Spastic Quadraplegic Cerebral Palsy

Etiology of Impairment: wears glasses, right esotropia, left visual field loss

Medications: none

VISUAL RESPONSE:

Pupil Reaction: Pupils respond equally to strong light in both eyes.

Alignment/Imbalance: When looking straight ahead, the right eye turns inward. She moves both eyes together.

Resists Eye Cover: No resistance other than a head turn to move away from cover.

Blink: Showed normal blink reflexes to noise, light, and movement. A significant startle reflex was also seen.

Visual Field Loss: To a wide variety of visual stimuli, JA did not attend well to objects in her left lateral field. Later in the test though, she demonstrated visual attending to objects at the far left of her tray.

Peripheral Field Loss: The same note applied to peripheral field losses as to visual field losses.

Eye/Field Preference: She showed no preference to any particular visual field. She appeared to use both eyes.

VISUAL MOTOR

Inappropriate Visual Behaviors: No flicking, squinting, tilting or eye pressing seen.

Localization: JA localized sound, lights, and voices in 5-10 seconds. Some localizing was done by turning just eyes and others by turning body and head.

Eye contact, Persons, and Objects: She did make eye contact with objects and would make eye contact with people 5-8 seconds after locating their faces.

Fixation: She will inspect herself in a mirror and easily maintains an intense fix on a tiny object. She easily recognizes familiar people from across the room and fixated on their faces.

Tracking Ability: Tracking ability was not smooth. It is questionable whether she crossed midline. She showed vertical and horizontal tracking. She was not capable of diagonal or rotary tracking.

Track Lower than Gaze: She tracked lower than gaze vertically.

Convergence/ Divergence: As objects approached her less than 10 inches she frequently closed her eyes.

Gaze Shifts: She would shift her eyes from toys that were one foot apart and would fixate easily, but usually by turning head.

Scanning: She would slowly scan three objects in a row, placed 10 inches apart on the front of her wheelchair tray. It took approximately 20 seconds to complete the scan.

Accomodation: Not tested

Eye/Hand Coordination: She would grasp at a toy held in midline and above her right hand. Swiping motions by the left hand were seen.

Eye/Foot Coordination, Mobility Non-ambulatory, not tested.

Locate Dropped Object: JA would watch objects dropped on her tray. She could easily find and pick up 1/4" pegs at 8-10 inches. She also watched a 1" diameter object fall to the ground from her tray and located them at 3-4 feet.

VISUAL PERCEPTUAL

Visual Pursuit: Delayed visual pursuit 1-2 seconds when objects were poured from container about 2 feet above her head. She did not appear to see the objects in motion.

Causality: She attended to scribbling on paper and copied scribbled motions made by trainer.

Object permanence (hidden object) She displayed object permanence.

Object Concept: JA would look at books and find 1" diameter objects although her attention span to the pictures was 5-10 seconds.

Means/Ends: Given a wind-up toy that trainer activated, JA attempted to turn the knob and reactivate it.

Spatial Orientation: JA did knob puzzles, nestling boxes and stacked blocks.

Matching/Classifying: JA found 10/10 objects from 1" pictures placed on the right half of her tray.

Shape: She carefully identified 1" triangle, square, circle, by pointing to similar ones taped on her tray.

Color: She matched primary colors with not difficulty. Some shades of white and tan were noted.

Sequence size: She successfully sequenced 4/4 items from smallest to largest.

Sequence story: Unable to complete a 4 cell sequence of the story "Hey, Diddle, Diddle."

CONCLUSIONS/ RECOMMENDATIONS:

1. JA tried very hard to complete all tasks and interacted well with the examiner.

2. Vision function for JA is tied closely to her motor impairments. It is difficult to separate the motor component from the visual component.

3. I would recommend that JA have her glasses straightened and an eye glass strap be added to maintain the glasses nigh on her nose.

4. I would also recommend that careful attention be paid to positioning and the development of a "ready" response.

5. When JA attempted to reach to the farthest forward area of her tray she strained against her shoulder straps. Perhaps a different shoulder restraint system would increase her range on the tray.

6. JA seemed to startle frequently when objects were presented from the left side. She did show awareness of visual stimuli that approached from the left, but not consistently.

7. JA successfully pointed to 1" color objects and black and white line drawings. A variety of presentations were tried. The inclined plane of about 2" was the one with the most range of pointing. She appeared to see objects in the far corners of her tray and with trunk rotation was able to point to them.

8) She successfully identified 3 shapes and 3 colors at a distance of 5 feet.

9) With the assistance of the Occupational Therapist and Speech therapist, I feel a good sample of her behavior and visual skills were seen.

10) I recommend a followup vision assessment for her in one year.

11) I also recommend that a current visual acuity report be added to her school file.

_____ _____

Ronald E. Marks Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

NAME: JA

DATE OF BIRTH: 12/21/83

DATE OF REPORT: 11/16/88 updated 11/15/89

Reason for Referral: 1 year update/ IEP planning

Other conditions present: Spastic Quadraplegic Cerebral Palsy

Etiology of Impairment: wears glasses, right esotropia, left visual field loss

Medications: none

The previous assessment was done on 11/16/88. JA showed no major changes in many areas. This update will address only the changes. The conclusions and recommendations of the initial report are still appropriate unless otherwise noted.

VISUAL RESPONSE:

Alignment/Imbalance:

Cover Test- When one eye was covered, it was difficult to tell if either eye deviated. The test was attempted 5 times with inconsistent results.

Visual Field Loss:

JA continues to not attend well to objects in her left lateral field.

VISUAL MOTOR

Eye contact, Persons, and Objects:

JA made contact with objects and persons after locating them in 2-5 seconds. This shows improvement over the previous assessment.

Track Lower than Gaze:

She tracked lower than gaze both vertically and horizontally.

Scanning:

She would slowly scan three objects in a row, placed 10 inches apart on the front of her tray. It approximately 5 seconds to

complete a scan. This compares with 20 seconds to complete a scan on the previous assessment.

Eye/Hand Coordination:
She showed a 5 second delay in trapping a rolled tennis ball. She also picked up 3/4" long colored plastic pegs from her tray.

Locate Dropped Object:
Similar to the previous assessment, JA would easily locate objects that fall from her tray. However, it only took 3-5 seconds for her to locate 3/4" long plastic pegs at 3-4 feet.

VISUAL PERCEPTUAL
No significant changes from previous assessment.

CONCLUSIONS/ RECOMMENDATIONS:

1. JA tried very hard to complete all tasks and interacted well with the examiner.

2. JA showed significant improvement visual motor tasks, specifically those involving visual tracking and locating.

3. The temples on her glasses and the eyeglass strap hold her glasses securely.

4. She appeared to miss items on the left side of her tray unless pointed out to her.

5. JA has shown improvement in the classroom use of her vision compared to her previous assessment.

6. Similar to the previous assessment, JA's visual functioning is influenced strongly by her motor limitations. Activities that involve fine motor and large motor control will benefit her visual development.

_____ _____

Ronald E. Marks Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

NAME: KA

DATE OF BIRTH: 10/1/84

DATE OF REPORT: 11/17/89

Reason for Referral: IEP planning

Other conditions present: diabetes insipitus, porenephalic cysts, developmentally delayed, non-categorical

Etiology of Impairment: visually impaired

Medications: DDAVP, reglin, bentyl

VISUAL RESPONSE:

Pupil Reaction:

Both pupils react equally to strong light in both eyes. The examiner notes that hippus was exhibited during the exam.

Alignment/Imbalance:

When each eye was covered independently, the other eye moved off of center. The right eye deviated toward the center and the left eye turned up and out.

Resists Eye Cover:

No resistance to eye cover, either eye.

Blink:

Blink reflexes were seen to noise, bright light and movement. All stimuli, with the exception of sound, needed to be within 1-2 feet of KA in order for her to respond.

Visual Field Loss/ Peripheral Field Loss:

KA responded to penlights in all visual fields and turned her head and made vocalizations. The light was between 12-18" from her.

Eye/Field Preference:

She showed a definite field preference for just left of center on her left medial field. She placed objects and examined her

hand in that field at a distance of about 4-5" several times during the exam.

VISUAL MOTOR

Inappropriate Visual Behaviors:
KA filtered her hands and fingers against light.

Localization:
She localized sound and objects. She turned her head and eyes and eyes independently to find objects like penlight and musical bells at a distance of 12-14".

Eye contact, Persons, and Objects:
She does not make eye contact with persons, but does with selected objects within the classroom.

Fixation:
Monocular fixation was seen at a distance of about 5". She did not show interest in a small hand mirror.

Tracking Ability:
Horizontal tracking was noted but was not smooth and she had difficulty crossing midline.

Track Lower than Gaze:
No tracking lower than gaze, either vertical or horizontal.

Eye/Hand Coordination:
KA moved her right hand and twisted her body to reach for a shiny 1" diameter object at a distance of about 6". She showed a 2-3 second delay in reaching for the object.

The skills in the following test items were not appropriate for her abilities. This conclusion was reached based on observation of the student's developmental level as well as visual developmental scales.

Convergence/ Divergence:
Gaze Shifts:
Scanning:
Accomodation:
Eye/Foot Coordination, Mobility
Locate Dropped Object:

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
Visual Pursuit:
Causality:
Object permanence (hidden object)
By report of staff, she displays this in the classroom.
Object Concept:

Means/Ends:
Spatial Orientation:
Matching/Classifying:
Shape:
Color:
Size:
Sequence size:
Sequence story:
Figure/ground:
Interpret pictures:
Reading:
Writing:

CONCLUSIONS/ RECOMMENDATIONS:

1. KA was observed working with three regular care-givers and the examiner feels that a good sample of her visual behavior was seen.

2. KA performed better on visual tasks when music was played in the background and also did better in the comfort of her wheelchair.

3. KA's chosen visual distance is between 5-8". A wide variety of experiences can be provided in this range. I recommend that classroom staff explore increasing that distance to 12".

4. Visual stimulation activities should be continued with Ka in all visual fields. Providing pleasurable non-threatening visual activities on a daily basis, possibly paired with music would be ideal. These activities should not be continued beyond the point when KA becomes fearful or angry.

5. The classroom staff should explore teaching KA to fixate and/or look at faces at 12".

6. KA's visual development when placed on a developmental scale would be approximately 3-4 months.

7. A list of appropriate vision stimulation activities is available on request. The classroom program incorporates excellent vision stimulation opportunities for KA.

8. I recommend a followup functional vision evaluation in about one year.

_____ _____

Ronald E. Marks Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: KM

Date of birth: 3/03/82

Date of report: 12/19/89

Reason for Referral: IEP planning

Other conditions present: cerebral palsy

Etiology of Impairment: bilateral central field losses

Medications: none noted in file

VISUAL RESPONSE:

Pupil Reaction:
Pupils respond equally to strong light in both eyes.

Alignment/Imbalance:
Light was reflected in the same place on both pupils. Nystagmus and rapid scanning movements were evident. When left eye was covered, right eye turned inward.

Resists Eye Cover:
No resistance to eye cover.

Blink:
Normal blink reflex seen to light, noise, and movement. A significant startle reflex was also seen.

Visual Field Loss:
KM did not respond to objects quietly placed at midline. He did locate a wide variety of objects in all peripheral and medial fields.

Peripheral Field Loss:
No peripheral field losses noted.

Eye/Field Preference:
KM showed no preference to any particular visual field, but during the exam, used the left eye more frequently.

VISUAL MOTOR

Inappropriate Visual Behaviors:
No squinting, eye pressing, flicking or filtering seen.

Localization:
KM localized sound, lights and voices in 5-10 seconds. Some localizing was done by turning just eyes and other by turning body and head. There was a one to two second delay in some cases.

Eye contact, Persons, and Objects:
KM easily made eye contact with persons and objects.

Fixation:
KM used global and monocular fixation to view most of his world from 2-10 feet. He looked at small objects and himself in a mirror at 1-2 inches.

Tracking Ability:
KM was able to track horizontally and vertically, but was interrupted in the central fields. He used a rapid scanning motion with his eyes to locate objects, especially in the central fields.

Track Lower than Gaze:
He was able to track objects horizontally across his wheelchair tray. Although he would place his head on tray to see better utilize his peripheral vision to track objects.

Convergence/ Divergence:
It was difficult to tell if KM uses this skill. It was attempted 5 times with different objects at 4-18 inches.

Gaze Shifts:
He was able to easily shift his gaze between two 1" objects 1 foot apart.

Scanning:
KM scanned three objects by report and by demonstration of the five cell switch on his wheelchair. The examiner noted a delay of 1-2 seconds of shifting gaze between the three objects.

Accomodation:
It was difficult to tell if KM uses this skill. It was attempted 5 times with different objects at 6-30 inches.

Eye/Hand Coordination:
KM is able to reach out and grasp slow moving object with right hand moving horizontally and vertically 6-12 inches from him.

Eye/Foot Coordination, Mobility
Not tested. KM was in his wheelchair during the testing period.

Locate Dropped Object:
KM was able to easily locate a dropped object 1 inch in diameter dropped from his wheelchair tray.

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
KM reached into a small container and poured a small container to get M & M's.

Visual Pursuit:
KM was not able to follow M & M's dropped from 15" in front of him.

Causality:
KM attended to large circular motions made with a magic marker by examiner. He also demonstrated cause and effect using small toys in the classroom.

Object permanence (hidden object)
Object permanence demonstrated using M & M's and small toys in a band-aid box.

Object Concept:
KM turns pages in a book and looks at pictures.

Means/Ends:
KM looked for a small toy that was activated and then hidden from view. He also attempted to restart the toy.

KM was tired and unwilling to continue and was not tested on the following test items. Teacher interview was used for the following items.

Spatial Orientation:
By report, KM does small puzzles and 1"blocks in class.

Matching/Classifying:
By report, KM matches identified two identical items in the classroom.

Shape:
KM was able to identify 1" diameter triangle, circle, and square but demonstrated some guessing at this test item.

Color:
By report, can identity three primary colors, but not outside of the instructional sequence.

Size:
Sequence size:
Sequence story:
Figure/ground:
Interpret pictures:
Reading:
Writing:
KM held the marker and made scribbles on the paper. When requested to make some shapes, he did not demonstrate a recognizable product.

CONCLUSIONS/ RECOMMENDATIONS:

1. KM did not have his glasses for close work on 12/19/89 and this assessment probably did not represent his best effort.

2. He tired of the assessment after 20 minutes and began guessing at the test items.

3. KM did not note 1" diameter contrasting color toys presented quietly at midline. He also missed 2 brown M&M's on the far edges of his tray.

4. Horizontal nystagmus was noted especially when attempting to fixate.

5. KM showed the ability to quickly scan back and forth with head and/or eyes to find objects placed in front of him. This adaptation worked well for many of the visual tasks on the assessment.

6. His preferred visual distance was 12-14". This was seen in the exam, with close circuit TV, and the computer screen.

7. The following suggestions for use with classroom materials, would make KM use his vision more efficiently:
   a. A dark colored placemat for use at meals and table work, to provide contrast and decrease glare.
   b. The use of an easel at 20-45 degrees for writing and viewing materials. This could be incorporated into his wheelchair tray.
   c. The use of hand-held manipulatives, such as marbles or other 1/4 to 1/2" items, could be used for addition and subtraction skills.
   d. A correction procedure should be developed for guessing at requests without using his vision. During the assessment, this resulted in guessing some of the test items correctly without looking.
   e. Pick books or pictures with distinct or no background. Reduce amount of fine detail in pictures- keep pictures clean, clear, and simple.

8. KM's visual development when placed on a developmental scale would be approximately 5-6 months. KM certainly has potential for growth in the use of his vision.

9. KM interacted well with adults and needs to continue to have opportunities to develop social skills with peers. Visual perception is a skill could aid this social development.

10. An ophthalmologist report should be on file annually in his special education file.

11. I recommend a follow-up functional vision evaluation in about one year.

_____ _____

Ron Marks
Vision Assessment Specialist

Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

NAME: MM

DATE OF BIRTH: 5/30/86

DATE OF REPORT: 11/13/89

Reason for Referral: Questions about vision use

Other conditions present: Non-Categorical, Developmentally delayed

Etiology of Impairment: Unknown

Medications: Clonopin

VISUAL RESPONSE:

Pupil Reaction:

Pupils responded to strong light in both eyes.

Alignment/Imbalance:

Left eye turned in when fixating at six to twelve inches. Slight medial deviation of right eye when left eye was covered.

Resists Eye Cover:

Resistant to eye cover on both eyes, blinked repeatedly and pushed the cover away.

Blink:

Blink reflexes to light, noise and movement.

Visual Field Loss:/Peripheral Field Loss:

Followed stimuli in all visual fields. No loss in any peripheral field noted.

Eye/Field Preference:

No preference to objects placed in either field.

VISUAL MOTOR

Inappropriate Visual Behaviors:

No squinting, eye pressing, eye poking or filtering noted.

Localization:
Localized sound, light, objects and faces within five seconds at distances of one to ten feet. Localization was observed by turning his head and eyes.

Eye contact, Persons, and Objects:
Makes eye contact within 3 seconds with persons and objects within ten feet.

Fixation:
Binocular fixation with a slight left esotropia when concentrating on an object.

Tracking Ability:
Good horizontal, vertical, and diagonal tracking and across midline. Unable to track an object moved in a rotary motion.

Track Lower than Gaze:
Tracked lower than gaze horizontally but not vertically.

Convergence/ Divergence:
MM was able to follow an object from 18" to 4" moving slowly toward and away from his face with no difficulty.

Gaze Shifts:
He was able to shift smoothly back and forth between two 1/2" pieces of rice cracker spaced one foot apart.

Accomodation:
He easily changed focus between objects at 30" and 6".

Eye/Hand Coordination:
A sweeping hand motion was used to locate 1/4" pieces of rice cracker on tan lunch tray.

Eye/Foot Coordination, Mobility
Non-ambulatory child, crawled quickly between objects. He would not kick overhead toys when placed on his back.

Locate Dropped Object:
MM easily saw a 1" diameter toy that fell from his lunch tray.

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
MM was unsuccessful in reaching into a 3" diameter cup to grasp pieces of cracker.

Visual Pursuit:
There was a 1/2 to 1 second delay when following 1/2" diameter crackers dropped in front of him.

Causality:
Made large circular motions in flour mixture on table in front of him on contrasting background. He also watched other students draw in the mixture.

Object permanence (hidden object) Objects that were out of view, MM did not attend to.

Object Concept: MM held a book at an angle and "patted" the pages.

Spatial Orientation: He unsuccessfully attempted to separate 2 popbeads.

CONCLUSIONS/ RECOMMENDATIONS:

1) MM was observed in his classroom at Hawthorne. He showed visual interest in the materials presented to him.

2) Horizontal nystagmus was noted when MM concentrated on an object. This did not appear to interfere with his reach for objects or track moving objects.

3) MM's near and far acuity was difficult to test because of his limited motor response.

4) He used all visual fields and tracked moving objects in all planes.

5) Persons working with MM should observe him in his environment for any difficulty with visual tasks.

6) MM needs a visual acuity assessment appropriate to his abilities done annually. Dr. Salisbury's report of 9/89 is currently on file.

7) MM does not appear to have a visual loss that is beyond his developmental age.

8) I recommend a follow-up vision assessment in one year.

_____ _____

Ronald E. Marks Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: SH

Date of birth: 4/3/79

Date of report: 12/18/89

Reason for Referral: Child Study Team recommendation

Other conditions present: Down's Syndrome

Etiology of Impairment: low visual acuity

Medications: none noted in the file

VISUAL RESPONSE:

Pupil Reaction: Pupils responded equally and reacted to light.

Alignment/Imbalance: No alignment problems or imbalance noted.
Cover test: Not consistent.

Resists Eye Cover: No resistance to either eye being covered.

Blink: Blink reflexes to noise, light, and movement.

Visual Field Loss/ Peripheral Field Loss: No apparent or peripheral field losses noted.

Eye/Field Preference: No preference shown for either eye or any visual field.

VISUAL MOTOR

Inappropriate Visual Behaviors: No squinting, eye pressing, or flicking seen, although some eye rubbing was noted as she became tired.

Localization: Quickly localized sounds, lights, objects and movement in all visual fields. She was also able to attend to quiet stimuli with eyes moving independently in extreme right and left visual fields.

Eye contact, Persons, and Objects: Quickly made eye contact with persons and objects.

Fixation: Inspected herself in a mirror and appeared to use binocular vision to fix on tiny objects.

Tracking Ability: Was able to track horizontally and vertically and cross midline. She was not able to smoothly track a rotary or diagonally moving object.

Track Lower than Gaze: Was able to track horizontally lower than gaze, but not smoothly.

Convergence/ Divergence: A smooth scan of an object moving from 18" to 4".

Gaze Shifts/Scanning: Easily shifted gaze between two and three objects.

Accomodation: Accommodation was demonstrated looking at a colorful objects, one at 30" and one at 6". With her glasses it was difficult to see her pupils, but she did the task.

Eye/Hand Coordination: A tennis ball thrown to her was trapped with her hands against her body 4/5 times.

Eye/Foot Coordination, Mobility Was able to kick a rolling tennis ball with her right foot repeatedly.

Locate Dropped Object: Quickly noted objects, during the testing period, that dropped away from her onto the floor.

VISUAL PERCEPTUAL

Depth Perception/ Container Skills: Reached into and poured from a container to get small objects.

Visual Pursuit: Appeared to follow 1/2" diameter M & M's poured from a small cup.

Causality: Attended to marks made on paper by examiner and by report does cause and effect activities in the classroom.

Object permanence (hidden object) Quickly noted M&M'S that were hidden in a small container with a lid and rescued them.

Object Concept: Turned pages in a book and identified 1/16" objects in reading book "ants in a backpack"

Spatial Orientation: Easily completed an 8 piece puzzle, 6/8 nestling boxes, and stacked 6 1" blocks.

Shape: Identified triangle, circle, square, rectangle.

Color: Identified all primary colors and some shades with verbal clue "pink".

Sequence size: Sequenced 4 objects by size from 1" to 2".

Sequence story: Was not able to sequence a 4 item picture story. "Hey Diddle, Diddle"

Figure/ground: Was able to identify 1/16 and 1/4" objects in background of picture.

Interpret pictures: Was able to interpret story in reading book by looking at 1 to 2" color pictures.

Reading: Was able to read 1/4" letters of alphabet, identify 9/10 1" letters at 10 feet.

Writing: Some letter reversals. Numbers sat smoothly on line. See writing sample.

CONCLUSIONS/ RECOMMENDATIONS:

1. SH wore her glasses during the exam and appeared to give her best effort.

2. Her preferred distance is 6-8" for close vision.

3. SH appears to adapt well to her visual losses by adjusting her head and body positions.

4. There was no apparent visual-motor imbalance or distinct eye preference.

5. SH recognized the teacher and the examiner sitting quietly 20-30 feet away in a multi-colored classroom.

6. Her visual perceptual skills place her at the 4-5 year old visual developmental level.

7. Her visual impairment does not appear to impact her current educational program.

8. I recommend that a visual acuity or ophthalmologist exam report be placed in her file annually.

9. A tilted surface or easel might be useful for writing and reading activities. It should have a 3-4" rise on a 1-2' surface.

_____ _____

Ronald E. Marks — Date

Vision Assessment Specialist

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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: WS

Date of birth: 7/15/81

Date of report: 1/23/90

Reason for Referral: IEP planning

Other conditions present: cerebral palsy, non-verbal

Etiology of Impairment: partially sighted from birth

Medications: none noted in file

VISUAL RESPONSE:

Pupil Reaction:

Pupils react slowly in both eyes. The examiner notes that hippus was exhibited during the exam.

Alignment/Imbalance:

When each eye was covered independently, the other eye moved off of center. Each eye showed independent movement with very little binocular control.

Resists Eye Cover:

No resistance to eye cover, either eye.

Blink:

Blink reflexes were seen to noise, bright light and movement. All stimuli, with the exception of sound, needed to be within 1-2 feet of WS in order for her to respond. A significant startle reflex was seen.

Visual Field Loss/ Peripheral Field Loss:

WS responded to penlights in all visual fields and turned her head and made vocalizations. She responded slowly or inconsistently to lights presented directly over her head and in her right peripheral field. The light was between 12-18" from her face.

Eye/Field Preference:

She showed a no preference to either eye or any visual field.

VISUAL MOTOR

Inappropriate Visual Behaviors:
WS rapidly blinked eyes at the approach of other students.

Localization:
She localized sound and objects. She turned her head and eyes and eyes independently to find objects like penlight and audible toys at a distance of 12-14".

Eye contact, Persons, and Objects:
She does not make eye contact with persons, but does with selected brightly lit objects.

Fixation:
Monocular fixation was seen at a distance of about 5". She did not show interest in a small hand mirror. Both eyes appeared to move independently.

Tracking Ability:
Slow horizontal tracking was noted but was not smooth and she did not appear to cross midline.

Track Lower than Gaze:
No tracking lower than gaze, either vertical or horizontal.

Eye/Hand Coordination:
WS showed no hand movement to intercept visual stimuli. She did appear to have some hand movement in response to brightly lit objects and a favorite toy.

The skills in the following test items were not appropriate for her abilities. This conclusion was reached based on observation of the student's developmental level as well as visual developmental scales.

Convergence/ Divergence:
Gaze Shifts:
Scanning:
Accomodation:
Eye/Foot Coordination, Mobility
Locate Dropped Object:

VISUAL PERCEPTUAL

Depth Perception/ Container Skills:
Visual Pursuit:
Causality:
By report of staff, she displays this in the classroom including use of switches for auditory stimuli.
Object permanence (hidden object)
Object Concept:
Means/Ends:

Spatial Orientation:
Matching/Classifying:
Shape:
Color:
Size:
Sequence size:
Sequence story:
Figure/ground:
Interpret pictures:
Reading:
Writing:

CONCLUSIONS/ RECOMMENDATIONS:

1. WS was observed working with three regular care-givers and the examiner feels that a good sample of her visual behavior was seen.

2. WS's chosen visual distance is between 3-6". A wide variety of experiences can be provided in this range. I recommend that classroom staff explore increasing that distance to 12".

3. Some exploration be done in incorporating motor skills using her hands and feet in an attempt to reach desirable visual stimuli.

4. Visual stimulation activities should be continued with WS in all visual fields for minimum of six months. Providing pleasurable non-threatening visual activities on a daily basis would be ideal. These activities should not be continued beyond the point when WS becomes fearful or angry.

5. The classroom staff should explore teaching WS to fixate and/or look at faces at 12".

6. WS's visual development when placed on a developmental scale would be approximately 3-4 months.

7. A list of appropriate vision stimulation activities has been provided to the classroom teacher. The classroom program could incorporate excellent vision stimulation opportunities for WS.

8. I recommend a ophthalmologist's report be placed in her file annually.

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_____ _____

Ron Marks
Vision Assessment Specialist

Date

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MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: VC

ODate of Birth: 4/30/88

Date of Report: 4/11/88

Reason for Referral: _____

Other conditions present: genetic birth defect

Etiology of Impairment: Known visual defect from birth

Medications: None noted

VISUAL RESPONSE:

Pupil Reaction: Absent to both eyes to strong light, although there does appear to be some response in the left eye.

Alignment/Imbalance: Appears to have beginning integration of her eyes to motion.

Resists Eye Cover: Definitely appears to e some form of muscle imbalance as right eye does some independent motion.

Blink: HAd blink response to noise and light primarily on the right side. The infantile blink reflex of McCarthy blink was seen on the outside of both eyes.

Visual/ Peripheral Field Loss: Unable to note bright light in left visual field, but quickly turned to make good use of lateral edge of right peripheral field. Noted light at 90 degrees coming from behind on right eye.

Eye/Field Preference: Shows a definite preference for right eye;holding toys and objects from 2" to 1/4" from right eye.

VISUAL MOTOR

Inappropriate Visual Behaviors: Eye pressing, filtering, eye rubbing and placing objects in eye were seen during testing.

Localization: Localized sounds and attempts to them by changing head and eyes and changing body position. Only localized light in extreme right field.

Eye contact, Persons, and Objects: Does not make eye contact with persons, but does make contact with objects at 1/4" to 1" distance from right eye.

Fixation: Global fixation noted, some monocular fixation noted in right eye. Able to fix on contrasting color yarn on table.

Tracking Ability: Could not track moving object, would reach toward a moving object when it tracked through her right peripheral field.

Track Lower than Gaze: Unable to do

Convergence/ Divergence: Unable to do

Gaze Shifts: Was able to shift back and forth between two 2" objects at one foot distance after localizing toy with right eye.

Scanning: Unwilling to do

Accomodation: Unwilling to do

Eye/Hand Coordination: Was able to shift back and forth between two 2" objects at one foot distance after localizing toy with right eye.

Eye/Foot Coordination, Mobility Mobility: walking in school hallway with assistance. recognizing landmarks in 140' path.

Locate Dropped Object: Unable to locate dropped object of any size

<u>VISUAL PERCEPTUAL</u>

Visual Pursuit: Unable to test

Causality: Unable to test

Object permanence (hidden object) Unable to test

Object Concept: Picks a book up and filters it through the light

Means/Ends: Unable to test

Spatial Orientation: Does a familiar puzzle and removes nesting boxes

Figure/ground: Was 1/2" to 1" off in attempting to pick up M&M's of contrasting color, even though she had just tasted one.

CONCLUSIONS/ RECOMMENDATIONS:

1. VC appears to have a severe visual loss that leaves her primary vision in her right visual field.

2. I recommend that her teacher and parents be aware of vision stimulation and low vision suggestions on attached page.

3. I recommend a follow up vision assessment in one year.

4. I recommend that VC be given beginning orientation skills for the public areas of Hawthorne School

_____ _____

Ronald E. Marks Date

Ron Marks, BSRN,BA
Special Education Consultant
2409 Raymond
Missoula, MT 59802
(406) 728-8126

MARKS FUNCTIONAL VISUAL ASSESSMENT

Name: VC

Date of Birth: 4/30/88

Date of Report: 3/20/90 Retest 3/29/90

Reason for Referral: CST PLANNING

Other conditions present: genetic birth defect

Etiology of Impairment: Known visual defect from birth

Medications: None noted

The previous assessment was done on 4/11/88. VC showed no major changes in many areas. This update will address only the changes. The conclusions and recommendations of the initial report are still appropriate unless otherwise noted.

VISUAL RESPONSE:

Pupil Reaction: Absent to both eyes to strong light, although there does appear to be some response in the left eye.

Alignment/Imbalance: Appears to have beginning integration of her eyes to motion.

Cover Test: Definitely appears to have some form of muscle imbalance as right eye does some independent motion. Resists eye cover to right eye. No resistance to left eye.

Blink: Had blink response to noise and light primarily on the right side.

Visual/ Peripheral Field Loss: Unable to note bright light in left visual field, but quickly turned to make good use of lateral edge of right peripheral field. Noted light at 90 degrees coming from behind right eye.

Eye/Field Preference: Shows a definite preference for right eye;holding toys and objects from 2" to 1/4" from right eye.

VISUAL MOTOR

Inappropriate Visual Behaviors: Eye pressing, filtering, eye rubbing and placing objects in eye were seen during testing.

Localization: Localized sounds and 1/2 to 1" unlit objects and attempts to locate them by changing head and eyes and changing body position. Did not localize light in left lateral field.

Eye contact, Persons, and Objects: Does not appear to make eye contact with persons, but does make contact with objects at 1 ¼" to 1" distance from right eye.

Fixation: Global fixation noted, some monocular fixation noted in right eye. Quickly fixed on 1/2 to 1" objects on contrasting background. It is unclear if binocular fixation occurred.

Tracking Ability: Would reach toward a moving object when it tracked through her right peripheral field. Beginning integration of horizontal and vertical tracking with the use of head turn only.

Track Lower than Gaze: Horizontal only (see Tracking Ability)

Gaze Shifts: Was able to shift back and forth between two 2" objects at one foot distance after localizing toy with right eye.

Scanning: Similar to Gaze Shift (above) but unclear if she looked at each of the three objects independently.

Eye/Hand Coordination: Was able to shift back and forth between two 2" objects at one foot distance after localizing toy with right eye.

Eye/Foot Coordination, Mobility Mobility: walking in school hallway with assistance. recognizing landmarks in 140' path.

VISUAL PERCEPTUAL

Causality: Watched the examiner make circular motions with an orange marker on white paper, but did not attempt to repeat activity. By report of classroom staff, switch toy use has been inconsistent.

Means/Ends: A toy with continuous action was stopped. She looked for the activity but did not attempt to reactivate it. She threw the toy.

Spatial Orientation: Disassembles puzzles and nestling blocks, but requires assistance to reassemble.

The skills in the following test items were not appropriate for her abilities. This conclusion was reached based on observation

of the student's developmental level as well as visual developmental scales.

VISUAL MOTOR

Convergence/ Divergence:
Skills:
Accomodation:
Visual Pursuit:
Locate Dropped Object:

VISUAL PERCEPTUAL

Depth Perception/ Container

Object permanence (hidden object)
Object Concept:
Means/Ends:
Matching/Classifying:
Shape:
Color:
Size:
Sequence size:
Sequence story:
Figure/ground:
Interpret pictures:
Reading:
Writing:

RESULTS/ CONCLUSIONS :

1. VC interacted well with the examiner and reexamined on task and interested in tasks presented during the testing period.
2. As with previous report (4/11/88) brightly lit objects hold the most attention for VC.
3. VC has shown significant progress in visual orientation and mobility goals using her wheelchair and walker at Hawthorne school in her 1989-90 IEP. These goals could be expanded to include supervision not only from staff, but from sighted peers.
4. VC consistently reached for a 1/2 to 1" diameter unlit object at 2'. She only found 3/ 10 M&M's on a contrasting background. She did not show interest in two dimensional objects.
5. VC turned her head quickly from side to side to scan objects in her field of view. This is a very functional adaptation of her residual vision.
5. VC scores approximately 5-6 months on normal visual developmental scales with some items at the 10-12 month range. This is virtually unchanged from the assessment of 4/11/88.
6. I recommend that IEP goals continue to show emphasis on pre-vocational skills. Those skills should include some form of an assembly/ disassembly activity as well as self help skills to foster independence.
7. An ophthalmologist exam should be placed in her special education file annually.

_____ _____

Ronald E. Marks Date

Validity Statement

The Marks Functional Vision Assessment developed by Ron Marks is, in my professional opinion, valid in its assessment of the educational needs of visually impaired/multi-handicapped children.

Signature	Title	Date
[signature]	MD	4/90

The functional vision assessment developed by Ron Marris is, in my professional opinion, valid in its assessment of the educational needs of visually impaired/ multi-handicapped children.

Signature

Educational Consultant in Visual Impairment, Multi Impairment Orientation + Mobility
Title

12/25/89
Date

Patricia D. Lewis

Validity Statement

The Marks Functional Vision Assessment developed by Hon Marks is, in my professional opinion, valid in its assessment of the educational needs of visually impaired/ multi-handicapped children.

Judy D'Isola-Zied — Teacher of Visually Impaired — 4-11-90

Signature — Title — Date

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT
QUESTIONNAIRE

Child Study Team participant role: Special educator

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

✓ Dr. report
__ School Nurse vision screen
✓ Other functional vision assessments
✓ Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1	2	3	4	5	✓6
Not at all Useful					Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

___a. Assessment results
___b. Conclusions of assessment results
✓ c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1	2	3	4	✓ 5	6
No confidence at all					Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___a. IEP goals and objectives
___b. other classroom placement
___c. change in teaching strategies
___d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1	2	3	4	5 ✓	6
Not Recommend					Highly Recommend

Comments:

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: Special Education Teacher

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

X Dr. report
___ School Nurse vision screen
___ Other functional vision assessments
X Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 5 (6)

Not at all Useful — Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

___ a. Assessment results
___ b. Conclusions of assessment results
X c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 5 (6)

No confidence at all — Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

X a. IEP goals and objectives
___ b. other classroom placement
X c. change in teaching strategies
___ d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 (6)

Not Recommend — Highly Recommend

Comments: Ron did an excellent job getting to know the studen before he did the assessment to obtain as accurate an assessmen as possible

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: case manager

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

X Dr. report
___School Nurse vision screen
___Other functional vision assessments
X Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 5 (6)

Not at all Useful — Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

3 a. Assessment results
2 b. Conclusions of assessment results
1 c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 5 (6)

No confidence at all — Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___a. IEP goals and objectives
___b. other classroom placement
___c. change in teaching strategies
X d. other wider range of activities

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 (6)

Not Recommend — Highly Recommend

Comments:

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: Special Educator

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

✓ Dr. report
___ School Nurse vision screen
___ Other functional vision assessments
✓ Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 5 (6)

Not at all Useful — Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

✓ a. Assessment results
✓ b. Conclusions of assessment results
✓ c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 5 (6)

No confidence at all — Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___ a. IEP goals and objectives
___ b. other classroom placement
X c. change in teaching strategies
X d. other Contact w/ Vision Consultant arranged further information gathered for handicapping condition

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 (6)

Not Recommend — Highly Recommend

Comments: Mr. Marks assessment was particularly useful in designing teaching strategies for Krysta. His participation in the CST to determine a handicapping condition was helpful.

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: teacher

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

___Dr. report
___School Nurse vision screen
X Other functional vision assessments
X Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 5 6
Not at all Useful ... Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

___a. Assessment results
___b. Conclusions of assessment results
X c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 5 6
No confidence at all ... Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

X a. IEP goals and objectives
___b. other classroom placement
X c. change in teaching strategies
___d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 6
Not Recommend ... Highly Recommend

Comments: Excellent Consultation and assessment. Recommended many valuable suggestions for vision stimulation and overall classroom instruction and organization

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: *Physical Therapist - consultive to CST*

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

X Dr. report
___School Nurse vision screen
___Other functional vision assessments
X Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 (5) 6

Not at all Useful — Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

___a. Assessment results
___b. Conclusions of assessment results
✓c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 (5) 6

No confidence at all — Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___a. IEP goals and objectives
___b. other classroom placement.
✓c. change in teaching strategies
___d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 (6)

Not Recommend — Highly Recommend

Comments:

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT
QUESTIONNAIRE

Child Study Team participant role: Case Manager / Teacher

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

X Dr. report
X School Nurse vision screen
___Other functional vision assessments
X Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 — 2 — 3 — (4) — 5 — 6

Not at all Useful ... Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

___a. Assessment results
___b. Conclusions of assessment results
X c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 — 2 — (3) — 4 — 5 — 6

No confidence at all ... Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___a. IEP goals and objectives
___b. other classroom placement
X c. change in teaching strategies
___d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 — (2) — 4 — (5) — 6

Not Recommend ... Highly Recommend

Comments:

Ron Marks, BSRN,BA
Special Education Consultant
Missoula, Montana (406-728-8126)

MARKS FUNCTIONAL VISUAL ASSESSMENT QUESTIONNAIRE

Child Study Team participant role: Consultant from MT School for Deaf & Blind

The purpose of this questionnaire is to measure the effectiveness of the Marks Functional Vision Assessment in providing useful or practical information for CST members.

1. What other sources of information did you have regarding this child's vision functioning?

___Dr. report
___School Nurse vision screen
___Other functional vision assessments
✓Your observations

2. Rate the Marks Functional Vision Assessment on practical information relating to your field.

1 2 3 4 5 6
Not at all Useful — Very Useful

3. What parts of the Marks Functional Vision Assessment were the most useful for your field?

X a. Assessment results
X b. Conclusions of assessment results
X c. Recommendations for student

4. Indicate your level of confidence in the accuracy of the results obtained by the Marks Functional Vision Assessment.

1 2 3 4 5 6
No confidence at all — Highly Confident

5. What changes in the intervention for this child did you make after receiving the results of the Marks Functional Vision Assessment?

___a. IEP goals and objectives
___b. other classroom placement
___c. change in teaching strategies
X d. other

6. Would you recommend that the Marks Functional Vision Assessment be used with other visually impaired children?

1 2 3 4 5 6
Not Recommend — Highly Recommend

Comments: Many Functional eval. consider illumination factors, there was not much concerning distance vision. There could be some assumption of low vision →