Saskatchewan
Learning

Teaching Students with Visual Impairments

A Guide for the Support Team

Web site: http://www.sasked.gov.sk.ca/k/pecs/se/publications.html

SUPPORTING student diversity

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Introduction

This resource offers basic information to help provide successful school experiences for students who are blind or visually impaired.

This guidebook will include information regarding:

- the nature of the student's visual impairment;
- the specific needs of students with visual impairments;
- the specific needs of students with visual impairments and other disabilities;
- assessment;
- instructional strategies;
- the use of technology;
- the importance of orientation and mobility instruction;
- transition planning;
- terminology used in referring to visual impairments (see Glossary); and
- recommended resources.

Notes for Administrators

The attitude of the in-school administrator toward the inclusion of a student with a visual impairment is one of the main factors affecting the success or failure of attempts to provide inclusive education. The administrator's attitude influences the attitudes of others, therefore creating a climate of acceptance or of rejection.

An administrator who believes in the inclusion of a student with a visual impairment will:

- make a commitment to the student that is reflected in the actions of the administrator;
- work to educate others to assist them in overcoming fear and prejudices. This will involve the provision of resources, both print and human, to teach about visual impairment and to encourage inservice for staff and students. Opportunities for open communication and networking with others who have experienced teaching students with visual impairments is important;
- involve teachers in the planning. Teachers need to be informed and to feel that they have opportunities to prepare and learn about the student's needs;
- address concerns and needs of teachers. Provide opportunities for teachers to communicate with each other. Provide resource materials, problem solving sessions and networking time;
- work to find the time and the resources necessary to support teachers in the classroom;
- establish a school-based support team and encourage collaboration, consultation and cooperation. Be an active member of this team. Provide the necessary release time so that collaboration may occur;
- encourage staff members to attend inservice sessions and to network with other teachers (e.g., ACCESS Workshops, Insight Conference);
- establish partnerships with parents and increase opportunities for parent involvement;
- assign a teacher assistant based upon student need. A student with a visual impairment does not always require this support. The role of the teacher assistant must be defined;
- facilitate the consultation with the ACCESS (Assistance, Collaboration, Consultation, Evaluation Support Services – Saskatchewan Learning) consultant. This consultation will provide recommendations and feedback that is important information for an administrator;
- support other consultations which may be required for the student (e.g., Orientation and Mobility Instruction, Technology Assessment); and
- understand the needs of the student to provide support for the program. The unique curriculum needs will require considerations such as the student traveling to a larger community for travel skills, cooking and other life skills.

Section I – Nature of Visual Impairment

Visual impairment refers to a significant loss of vision, even though the person may wear corrective lenses. The nature and degree of visual impairment may vary significantly, so each student may require individual adaptations to instructional practices and materials in order to learn effectively.

Visual impairment includes two main categories: blindness and low vision.

Legal Blindness – ranges from a visual acuity of 20/200 in the better eye after correction, to having no usable vision or a field of vision reduced to an angle of 20 degrees. Visual acuity of 20/200 means that the individual sees at 20 feet what is normally seen at 200 feet. A reduced field of vision means that the individual has tunnel vision with limited peripheral vision.

Blindness – ranges from being totally without sight to unreliable vision and primary reliance on other senses. A person with blindness usually uses braille as a reading and writing medium.

Low Vision – is reduced central acuity of 20/70 or less in the better eye after correction.

Most students with visual impairments have low vision. These students should be encouraged to use their residual (remaining) vision, when appropriate, using the necessary optical aids and adaptations. Students who are described as blind may have some usable vision.

Visual impairments are further classified as congenital or adventitious.

Congenital refers to loss of vision present at birth. Some of the more common causes of congenital visual impairment are:

- prematurity;
- genetic diseases;
- prenatal and perinatal infections; and
- maternal substance abuse.

Adventitious refers to loss of vision acquired after birth as a result of illness or accident.

The age and level of development of the student before the onset of the visual impairment influences the student's ability to acquire skills and concepts. Students with congenital blindness may have difficulty acquiring concepts, while students with adventitious blindness may retain sufficient visual memory to benefit from visual descriptions.

Although two students may be medically assessed as having the same diagnosis and visual acuity, they may each learn and function in different ways. A student's vision may fluctuate or may be temporarily influenced by such factors as:

- the nature of the visual impairment;
- fatigue;
- glare;
- inappropriate lighting;
- medication; and
- general health.

Common Eye Conditions

Following are the most common eye conditions teachers may encounter.

Albinism: Albinism is a genetic condition in which there is a lack of normal pigment in the eyes and often in the skin and hair. Students with albinism usually have reduced visual acuity, sensitivity to light and nystagmus (see below definition).

Amblyopia: Amblyopia is referred to as a lazy eye. There is reduced visual functioning in one eye that causes the student to use only one eye instead of both.

Cataract: A cataract is an opacity or cloudiness of the lens of the eyes, sometimes present at birth. Students with cataracts have reduced visual acuity and hazy vision that makes near and distant visual activities difficult, particularly in bright light. They may have poor colour discrimination.

Cortical visual impairment: Cortical visual impairment is caused by damage to the visual cortex in the brain or the nerve pathways. Most students with cortical visual impairment also have other disabilities. The visual response from students with cortical visual impairment is inconsistent. Providing visual stimulation may improve the student's ability to process visual input.

Retinal detachment: A retinal detachment occurs when parts of the retina pull away from the supporting structure of the eye and atrophy occurs. The retina may be reattached if little time has transpired.

Glaucoma: Glaucoma is a disease in which there is damage to the optic nerve, through increased pressure from the fluid within the eye, resulting in reduced visual acuity and loss of peripheral vision. The fluid pressure is monitored regularly by an ophthalmologist. Students with glaucoma generally have difficulty with mobility and focusing their gaze between near and distant objects.

Hyperopia: Hyperopia (farsightedness) is a condition in which the rays of light entering the eye focus behind the retina instead of on the retina. Students with hyperopia can see more clearly at a distance.

Macular degeneration: Macular degeneration is an eye disease which results in gradual loss of central vision. Students with macular degeneration have difficulty reading print on the blackboard or page.

Myopia: Myopia (near sightedness) is a condition in which the rays of light entering the eye focus in front of the retina instead of on the retina. Students with myopia can see more clearly up close.

Nystagmus: Nystagmus is involuntary movement of the eyes that can cause fatigue when carrying out visual tasks. Nystagmus is associated with many eye conditions or it may be the only diagnosis identified by an ophthalmologist.

Optic atrophy: Optic atrophy is the degeneration of the optic nerve fibers so that they are no longer able to transmit accurate visual images from the retina to the brain. An ophthalmologist will sometimes describe a student as having pale or grey optic disks in one or both eyes, which is an indication of optic atrophy. It is important to determine just how well the student can interpret what is seen both up close and at a distance.

Retinitis pigmentosa: Retinitis pigmentosa is a hereditary condition in which the retinal cells degenerate, particularly the rods which are responsible for peripheral and night vision. This results in a progressive narrowing of the field of vision, night blindness and often extreme sensitivity to light. Students with retinitis pigmentosa have difficulty with mobility, scanning the environment and reading print on the blackboard or page.

Retinopathy of prematurity: Retinopathy of prematurity is a disease of the retina in which the retinal blood vessels do not develop normally and scar tissue forms. Most students with retinopathy of prematurity benefit from the use of high illumination and magnifying aids.

Strabismus: Strabismus is a muscle imbalance that prevents the eyes from focusing together on a single point to achieve binocular vision. Students with strabismus may have significantly decreased vision in one eye and have difficulty with depth perception.

The Eye Report

The student's eye report provides essential information in understanding the diagnosis, acuities, prognosis and other considerations. This report should be requested when a student enters school and updated as needed. The student's eye doctor is an important member of the support team.

Needs and Expectations of Students with Visual Impairments

It is essential that students with visual impairments:

- be made welcome and given the opportunity to form social relationships within the school and wider community;
- be challenged to take risks that enable growth;
- be made aware of personal strengths, talents, learning styles and interests;
- have opportunities for experiential and incidental learning;
- be included in discussions;
- have opportunities to develop goals, dreams and aspirations;
- feel safe and comfortable throughout the school;
- work with individuals who understand the educational implications of vision loss;
- have appropriate learning resources and technology made available;
- be provided with appropriate materials and adaptive equipment to maximize learning;
- be provided with daily opportunities to experience success;
- develop positive self-esteem;
- have the same rights and responsibilities as other students;
- be expected to behave appropriately;
- communicate effectively;
- become independent and resourceful;
- plan early for meaningful careers; and
- become self-advocates.

Educational Implications of Visual Impairment

Students with visual impairments sometimes have fewer natural learning experiences because they are not able to observe objects and interactions. The areas of learning which are particularly affected are:

- concept development;
- interpersonal communication skills;
- life skills;
- orientation and mobility skills; and
- academic development.

Development of concepts is the basis of all learning. Spatial relationships, time, body awareness and self-awareness are just a few examples of fundamental concepts individuals need to make sense of their world. These concepts may need to be specifically taught to students with visual impairments. Although the main focus will be on academic development, providing a variety of opportunities for personal development can have a profound impact on a student who is visually impaired. Encouraging a positive self-image, appropriate dress, well-developed self-care skills,

good interpersonal communication, appropriate behaviours, increased independence and productive community living can all be tremendously beneficial in the healthy growth of students with visual impairments. As with all students, relationships are important for students with visual impairments and the classroom can be a wonderful place for development and maturity to flourish.

The development of a student with a visual impairment is affected by:

- the type and severity of the visual impairment;
- the onset of the visual impairment;
- the nature and degree of intervention;
- the use of residual vision;
- personality;
- the availability of equipment and resources;
- the presence of other disabilities;
- family adjustment and acceptance; and
- cultural attitudes to visual impairment.

Section II – Assessment

Gathering Student Information

The sample File Review Form found in Appendix 1 will assist the teacher in obtaining a comprehensive overview of student information in the following areas:

- medical;
- functional vision; and
- educational.

This form provides a guided process for reviewing student files and may be used as an information base in the development of the student's program plan. It may be completed in consultation with an educational consultant for students with visual impairments.

To facilitate the gathering of information, the student, parent and resource personnel may be interviewed by the teacher. Sample questions and a summary of information form are provided in Appendix 2.

Students with visual impairments should undergo examinations by ophthalmologists and/or optometrists to determine the nature and degree of the visual impairment. An eye report should be requested from the eye specialist and included in the cumulative records. The educational consultant for students with visual impairments will interpret the medical report for school personnel and identify the educational implications.

Functional Vision Assessment

The educational consultant for students with visual impairments develops a profile of the student's visual skills through a functional vision assessment. This profile, which conveys a picture of how the student sees, will assist the support team in developing the student's program plan and in augmenting teaching strategies.

A variety of assessment techniques and measures are used in the student's learning environment to determine how vision is used and what adaptations may be necessary. They include:

- file review;
- student observation;
- interviews with parent and teachers;
- play-based assessment;
- performance-based assessment;
- assessment portfolios;
- developmental checklists; and
- assessment tools for determining:
    - visual acuity, the finest detail the eye can see at near and far distances;
    - visual fields, the student's degree of peripheral vision;
    - depth perception, the student's degree of binocular vision (which is the ability of both eyes to work together);

- colour vision;
- appropriate reading and writing media (print, braille, audio); and
- appropriate technological aids and devices.

A functional vision checklist should be repeated when the student makes the transition to a different school or classroom setting or on the recommendation of the educational consultant for students with visual impairments. Growth and maturity can affect the student's vision and the underlying visual impairment may change with time.

Section III – The Support Team

Team building creates enthusiasm, trust and mutual support, which in the long term, leads to more effective and efficient task accomplishment. Preparation, planning and cooperation build the framework for learning. Establishing good communication with students, parents, community and school personnel will foster the student's social, emotional, communicative and educational development.

There is often a range of support services required for the student with a visual impairment. It is important to have a contact person in the school designated to coordinate the student's program. The support team may include the:

- student;
- parents;
- classroom teacher(s);
- special education/resource teacher;
- school administrator;
- teacher assistant(s) (TA);
- educational consultant for students with visual impairment (ACCESS);
- eye specialist;
- orientation and mobility specialist;
- technology specialist;
- school counsellor;
- early interventionist;
- school division coordinator for students with special needs;
- substitute teacher; and
- related service providers (CNIB, educational psychologist, occupational and physical therapist, speech & language pathologist, etc.).

Responsibilities of Team Members
The school administrator assigns a teacher, usually the special education/resource teacher, the primary responsibility for coordinating and developing the student's individualized program. Staff develop program plans with the assistance of parents and, where appropriate, students and other professionals. Listed below are some of the responsibilities and ways in which support team members might participate in the development and implementation of a successful program plan.

Student
Although the nature and degree of involvement will vary depending on the student and his/her age, the student should be involved in his/her program plan. The student should:

- understand the purpose of the support team and program plan and how to take part in the process;
- be encouraged to attend program planning meetings when appropriate;
- be able to identify, label and explain his/her goals;
- understand how objectives are individually tailored, evaluated, reviewed and updated;

- take responsibility for tracking goals, where appropriate; and
- develop self advocacy skills.

(Forms to solicit student involvement are located in Appendix 2.)

Parents

Education is viewed as the shared responsibility of the home and the school. Parents should be included as active members of the support team as early in the process as possible. Educational priorities identified by family members should be a primary consideration. The benefits of involving parents are numerous. Parents:

- are able to communicate a picture of the life of the student thus far;
- can provide up-to-date medical information;
- can help achieve continuity of programming over time;
- have important information regarding the likes, dislikes, interests and skills the child demonstrates in the home and community;
- can assist in developing goals and effective strategies; and
- can offer opportunities for practice, reinforcement, generalization and maintenance of skills in the home.

Strategies to support parent involvement:

- communicate openly and regularly with parents in language which is free of jargon;
- clarify how parents can participate;
- give parents the opportunity to specify how, and to what degree, they wish to become involved in the child's educational program;
- if available, provide parents access to parenting programs and support groups;
- contact parents by telephone as well as through written communication to notify them of support team meetings and invite them to bring a support person if they wish;
- advise parents of the topics which will be discussed at the support team meetings and who will be in attendance;
- send home a rough draft of goals and objectives to enable parents to familiarize themselves prior to the meeting;
- consider giving parents a goal-setting form that may be used to develop the student's program plan;
- have a school representative greet the parents, guide them to the conference room and make introductions;
- ensure parents are comfortable at the team meeting; and
- clarify, if you suspect that the parent is concerned or confused about any part of the meeting and summarize the action plan.

(Forms to use with parents are located in Appendix 2.)

Classroom Teacher

The classroom teacher is key to planning and implementing an effective educational program. The classroom teacher:

- shares information collected during the information gathering stage;
- is aware of the parents' or guardians' expectations for their child's program;

- is aware of the needs of a student with a visual impairment;
- plans and carries out instructional programs;
- modifies instructional methods and materials allowing ample time for preparation of adapted resources;
- develops strategies for assessing and communicating student progress; and
- maintains ongoing communication with the student, parents and other teachers.

(Appendix 2 contains several forms that may assist the classroom teacher.)

Special Education/Resource Teacher
The resource teacher is usually the teacher designated to coordinate the student's program. In addition the resource teacher:

- provides diagnostic assessment to determine student strengths and areas of need;
- generates ideas and suggestions for program modification and/or adaptations;
- provides advice about materials and resources;
- orders materials from the Saskatchewan Learning Resource Centre and acts as a liaison between the school and the Resource Centre;
- plans and carries out instructional programs;
- develops strategies for assessing and communicating student progress;
- maintains ongoing communication with parents and other teachers; and
- initiates and organizes support team meetings.

(Assistance may be found in Appendix 2.)

School Administrator
The administrator is a member of the support team. He/She ensures that program plans are prepared, implemented and evaluated. The administrator ensures support personnel, appropriate materials and inservice training are provided as required, given the needs of the student. The administrator is often the person who can ensure that team decisions can be implemented.

The administrator serves an important leadership function as a good role model by:

- accepting the student in the school;
- legitimizing team decisions;
- including the student in school activities;
- welcoming parental involvement; and
- supporting best practices.

The administrator's role also includes that of program evaluator and supervisor of staff. See *Notes for Administrators* page 2.

School Counsellor
The role of the school counsellor is to provide counselling services to a student who may be experiencing difficulty accepting his/her visual impairment.

Teacher Assistant
The teacher assistant is part of the support team. The primary responsibility of the teacher assistant is to support the classroom teacher, enabling the teacher to provide an educational program that meets the needs of all the students in the class, including the student with a visual impairment. It is important to define the role of the teacher assistant. The teacher assistant needs to be sensitive to the interactions between the student and peers, facilitating these relationships and the natural support that peers can provide. Supporting the student with a visual impairment who uses braille as a reading mode, involves becoming proficient in the use of braille. Other tasks may include:

- preparing braille, large print, audio or tactile materials;
- facilitating the student's use of optical and technological aids;
- adapting the environment to meet the student's needs;
- acting as a scribe and a braille transcriber;
- assisting in concept development, organizational and social skills;
- working individually with the student to reinforce the specialized skills, such as orientation and mobility and life skills; and
- serving as an intervener between the student and the environment.

Educational Consultant for the Visually Impaired
The role of the consultant is to respond to the needs of the teacher through the provision of assessment, consultation and inservice. These services may include:

- **assessment** of the student's functional vision, appropriate reading and writing media, appropriate technology, need for optical and non-optical devices and the evaluation of reading skills;
- **consultation** regarding adapted materials, techniques for program planning and instruction, orientation and mobility, modification of the classroom environment and strategies for inclusion;
- **inservice** addressing the inclusion of the student with visual impairments in the classroom, eye conditions, orientation and mobility, braille literacy and the social implications of a visual impairment; and
- **referral** for related services such as O & M, instruction and technology assessment.

(Sample forms are located in Appendix 2.)

Orientation and Mobility Specialist
Orientation and Mobility (O & M) specialists are trained to teach students with visual impairments the concepts, skills and techniques that enable them to travel safely and function efficiently in different conditions and situations in the environment. The more severe the visual impairment, the more O & M instruction will be needed. The range of techniques vary greatly and the O & M specialist will determine how best to teach the student. Saskatchewan Learning contracts these services from the Canadian National Institute for the Blind (CNIB) in Saskatoon and Regina. Confer with your consultant for the visually impaired about accessing these services.

Technology Specialist
When requested, a CNIB technology specialist (through an ACCESS referral) will conduct an assessment to recommend technology to meet the student's needs. Saskatchewan Learning contracts these services from the Canadian National Institute for the Blind in Saskatoon and Regina. Services may also be contracted through the Saskatchewan Abilities Council in Saskatoon.

CNIB Personnel
The role of the Canadian National Institute for the Blind in Saskatchewan includes:

- rehabilitation teaching, including instruction in communications and daily living skills;
- orientation and mobility instruction for independent travel using a white cane, sighted guide and public transportation;
- counselling to visually impaired children and their families;
- personal counselling and support;
- National Library Services in both braille and audio cassette;
- career development and employment services;
- technical aids services;
- counselling in recreational and leisure activities;
- public education and advocacy;
- information services; and
- community resources on blindness.

School Division Designate/Special Education Consultant
The special education consultant will organize and supervise the special education programs in the school division. He/She will serve as a liaison between parents and government agencies involved in child and family services. In addition, he/she may:

- help determine learning strengths and needs;
- complete referrals for related services such as ACCESS, shared services, etc.;
- provide advice about materials and resources;
- train staff to implement strategies;
- provide support for technology and other related services;
- act as a resource and support to families;
- maintain ongoing communication with the teacher and support team; and
- provide assessment as necessary.

Substitute Teacher
When the classroom teacher is absent, a substitute teacher will have the responsibility for the student who is visually impaired. Basic information regarding the student should be on file for the substitute. A form with information for the substitute teacher, which could be easily inserted into the teacher's day plan, can be found in Appendix 3.

Team Meeting
Schools have support team meetings to help teachers generate ideas and suggestions for program modifications for students who are visually impaired. The support team uses a collaborative process in which problem solving and brainstorming

techniques are utilized. Every support team has a unique design to fit the skills, expertise and demands within each school and across all levels.

The team meets on a regular basis to:

- develop an understanding of the student's strengths, interests and needs;
- share information and observations about the student's behaviour and learning in a variety of settings;
- make decisions about educational goals and objectives related to areas of student learning at school, at home and in the community;
- reach consensus about the support required from related service personnel;
- design educational methods and interventions; and
- make decisions about integrating related services, such as O & M, into the classroom.

It is important to summarize the meeting and the action plan, specifying who is responsible for what, and then schedule a time for the team to meet again. A recommended team meeting format is the MAPS (Multi Action Planning System) process. See Appendix 4 for the process details.

Section IV – The Student with Low Vision

Students with low vision exhibit a wide range of visual impairments. Teachers should be aware that no two students with low vision have the same functional vision even if they are diagnosed as having the same eye condition and similar acuity. Vision may fluctuate and be influenced by such factors as fatigue, light glare, lighting conditions and time of day. Therefore, special attention must be given in assessing the needs of the student with low vision. Accommodations can be incorporated into his/her program plan.

This section of the document presents guidelines for students with low vision at preschool, elementary and secondary levels. The levels at which basic skills and accommodations need to be developed are not discrete. The skills developed in the preschool years will flow into the elementary and secondary years. There are also general guidelines for teaching students with low vision that apply to all levels.

Classroom Accommodation

Welcoming the Student

- Introduce the student with low vision as you would any other student.
- Encourage the student to answer questions posed by other students about the eye condition.
- Verbalize praise and disapproval or use gestures such as a hand on the shoulder. Students with low vision may miss the message sent with facial expressions and body language.
- Be specific with descriptive language when explaining the location of a person or object.
- Talk directly to the student, using direct eye contact. Encourage the student to look at you when being addressed or when speaking to you.
- Encourage the student to look directly at people when conversing with them.
- Use a normal tone of voice.
- Feel comfortable using terms such as “look” and “see”. They will be part of the student’s vocabulary.
- Provide the student with the coat hook or locker closest to the door so it is easy to locate.

Safety

Students with visual impairments face an extra challenge when traveling around the school building. Most areas of the school present potential problems. Procedures such as fire drills, changing classes, going to the library and assemblies require that a plan of action be in place. Assess each room that the student will be using for potential hazards. These suggestions will help provide a safe environment.

- Familiarize the student with the school building as soon as possible.
- Limit clutter in the hallways, stairs and classrooms that the student will be using.

- Students with low vision should become familiar with the location of all furniture and fixtures in the room. If furniture must be relocated, be sure to inform the student.
- Highlight the edges of stairs and steps with contrasting coloured tape or paint.
- Keep all cupboard or closet doors closed.
- Train teachers and other students in the sighted guide technique.
- When going on a field trip or traveling in an unfamiliar environment, arrange for a buddy.
- Unless the student is familiar with your voice, identify yourself when conversing with them. Have other students do the same. Always tell the student when you are leaving them.

Seating

The seating in the classroom will depend on the functional vision of the student.

- Usually a student with a visual impairment will sit in the front of the classroom to be in closer proximity to the teacher and board.
- If the right eye is stronger, being on the left side of the classroom is best and vice versa.
- Source of lighting needs to be considered. A student with a visual impairment should not face direct light from windows or lighting. The teacher should avoid standing directly in front of a window or light source when teaching.
- If the student uses a reading stand or tilt-topped desk, be sure the desk provides for good posture to decrease fatigue. The student's feet should be flat on the floor and the reading stand tilted so that the student does not have to bend his/her neck uncomfortably.
- For group activities such as story time or videos, the student may require preferential seating.
- A sound field system may be considered for amplification of the teacher's voice and reduction of extraneous noises.

Teaching Tips

- A program plan is usually developed on an annual basis by the student's support team and is reviewed regularly.
- Plan ahead. If a student with low vision requires enlarged texts, audiocassettes or printed materials, they should be ordered or prepared ahead of time.
- Talk while you teach. The student may miss visual cues and written instructions.
- Teach in close proximity to the student when doing demonstrations or using visual aids.
- Verbalize notes as you write on the board. If a student cannot see or keep up with board work, provide him with an enlarged print copy or a scribe to write the notes using NCR (no carbon required) paper. Print may be easier to read than cursive writing.
- Allow the student to go up to the board or move the desk closer in order to view or copy the material.
- Check regularly to ensure that the student is making accurate notes.

- Provide extra time to the student. He/she will take longer to complete most tasks. The quantity of work required may be decreased.
- Consider oral exams or a scribe to write exam answers.
- Use tactile, concrete and real life material as much as possible. This provides opportunities for kinesthetic and tactile learning.
- Sufficient desktop and shelf space is needed to accommodate special materials. The student will need to learn to organize his/her notes, desk, shelves and locker. Colour coding notebooks and files may help. Maintaining organization should become the student's responsibility.
- Alternate visual tasks with non-visual tasks to avoid eye fatigue.
- The student with low vision requires the same discipline and behaviour expectations as other students.
- Say, "Tell me what you see" rather than "Can you see this?" when checking if a student can see specific visual material.
- Try to relate new learning to the student's experiences and knowledge. This will help to bridge gaps in learning.
- If a large volume of reading is required, consider having a teacher assistant or another student read the material to the student, or obtain it on audio tape.
- Skip the non-essentials. Older students can highlight important information in print material. Point out parts of the text that can be skipped.
- Provide outlines, point form notes, identify key concepts to help avoid fatigue and frustration when studying.
- The student with low vision may need extra explanation of some materials.
- Hand-over-hand techniques work well to demonstrate certain skills.
- Encourage the student to be assertive. He/she needs to learn when and how to request and refuse help and how to make his/her needs known.
- Encourage independent effort and incorporate proactive measure to reduce the likelihood of the student becoming dependent on others.
- The student's ability to participate in certain activities such as physical education, science labs and visual arts may be affected by his/her functional vision. Modification may be required.

Assignments and Examinations

Assignments and examinations can pose considerable difficulty for the student with low vision. Examination results should reflect the student's knowledge of the subject content. Each student's individual needs require consideration. The student may take more time to complete an assignment or examination than other students. Consider the student's well being when assigning homework, particularly if it requires extensive reading or writing. A student with low vision is often fatigued by the end of the school day and work quality may be reduced. Some of the following strategies may be used to enhance a work quality.

- Allow additional time for completion of assignments and examinations.
- Allow the student to complete an examination in more than one sitting if necessary.
- Reduce the number of examples required to demonstrate the student's understanding of a concept or mathematics operation.
- Reduce the number of questions to be answered.

- Provide an alternate way of testing the student's knowledge.
- Provide a scribe.
- Give the examination orally. Accept a computer print-out or answers recorded on an audiocassette.
- Avoid the use of computer answer sheets.
- The procedures to apply for special provisions for provincial testing are included in Appendix 5. Application should be made 8 to 12 months prior to the exam.

Lighting

- Eliminate glare as much as possible. This reduces visual fatigue. Shiny desk tops and glossy paper will reflect light and should be avoided. Placing a black or dark matte paper on the desk or tabletop will help to minimize glare and provide contrast. Matte finish paper is recommended for the student's work.
- The level of illumination required will depend on the student's visual disability. Some students can be extremely light sensitive. Natural, artificial, day and night lighting present different functional problems and require different solutions for each student. To determine the best lighting, the student and teacher must experiment with lighting conditions.
- Aids to control illumination indoors include occluders to improve contrast and block glare, visors to control light intensity and glare, absorptive lens and filters and incandescent lamps. Incandescent lamps emphasize the yellow-red light and have reflector shades and spring arms to help reduce glare and/or increase lighting levels. High-intensity lamps may also be useful. If lamps are used, the light should not shine directly into the student's eyes. Place the lighting to eliminate glare and shadows.
- Overhead projectors often have glare. A student with low vision may need a personal print copy of an overhead transparency.
- When the student uses the computer, an anti-glare filter screen may be needed.
- Outdoors, visors or wide-brimmed hats can control light intensity, and absorptive lenses and filters can minimize glare and reflection.

Contrast

The teacher can increase the amount of information available to a student by maximizing contrast. Sharp contrast between an object and its background makes the object more visible to the student. This is essential in reading, writing, drawing, cutting, pasting and physical education.

- Black and white or black and yellow provide the best contrast. Intense blue, green or purple on a buff or light yellow background may be preferable if glare is a problem. Experiment with the color of paper the student prefers.
- Keep the chalkboard as clean as possible. The student may have a preference for yellow or white chalk. Large chalk can be purchased. A white board provides good contrast if glare can be eliminated and a dark marker is used.
- Reduce visual distractions around an object.
- Avoid using materials with confusing patterns.

- Keep diagrams sharp, bold and simple. Too many details are confusing.
- Bold, sharp print provides good contrast. When enlarging print copies, try to achieve clear, non-blurry copies.
- Bold-lined paper, with varying amounts of space between the lines, may be helpful.
- The student may prefer to use pencils and pens with larger points and darker lead and ink.

Curriculum Suggestions for Teaching Students with Low Vision

Mathematics

- Students with low vision must physically manipulate concrete materials to master the basic concepts of math.
- The basic concepts of addition, subtraction, multiplication and division should be thoroughly understood before being practiced on the abacus or talking calculator.
- Practice mental math skills.
- Provide a compartmentalized tray in which to place articles for counting and matching.
- Pictorial directions for young students are helpful.
- Demonstrate measuring instruments individually to students with low vision.
- When doing activities involving measuring, the units used should be sufficiently large so that the student can work without assistance.
- Provide a worksheet instead of having the student copy from the board.
- Use real coins when teaching money.
- Digital talking watches can be used for teaching time.
- Inlaid geometric puzzles are useful for teaching fractions.
- Use black line graph paper.
- Large print texts or the use of a closed circuit television can be especially helpful in providing enlarged images of charts, diagrams, fractions and when teaching geometry.

Language Arts

- Labeled objects in the room should be at the student's eye level.
- Point out details in pictures to aid with comprehension.
- Use a template or line guide to help a student focus on what they're reading.
- Adjustable reading stands can promote good reading posture and reduce neck and back fatigue.
- Emphasis should be placed on vocabulary building, word-attack skills and comprehension rather than speed. Students with low vision will read slower.
- Large print is not necessary for all students with low vision. Often normal print held close to the eyes is legible. Bold, clear print is best.
- Oral drills will help improve the student's spelling.
- Paper with well-spaced bold black lines is useful for printing and handwriting.
- The younger student should have a written example of the alphabet on his/her own desk.

- The student should be given time to practice reading handwriting.
- Introduce keyboarding skills by grade 3 or 4.

Arts Education

- When written music is used, a larger format and darker staff lines may be necessary.
- Encourage the student to develop an interest in playing an instrument.
- Develop the student's appreciation of music.
- Encourage the student with low vision to attempt the same visual arts activities as other students.
- Paper with raised line drawing or black line drawing will indicate where the student should colour.
- Clay and paper sculpture, textile arts, 3-dimensional forms, finger painting and collage are art forms and activities that students with visual impairments can enjoy.
- Participation in drama provides the opportunity to learn everyday gestures and movements that the student with low vision may not learn through visual observation.
- A heavy string or tape on the floor will indicate where the student should walk and move to on the stage in drama.

Science

- Raised line, large print or bold line diagrams can be used. Avoid detail.
- Assistance may be required in a lab to describe changes and aid in measurement.
- The student should be allowed to examine the apparatus and materials before an experiment. Some science equipment is available with tactile markings.
- The student should be as close as possible to a demonstration.
- Use real life articles or models if possible.

Social Studies

- Raised line, large print or bold line maps and atlases should be used. Too much detail may be confusing.
- Large print textbooks are available from the Saskatchewan Learning Resource Centre.
- Reference materials may be scanned and listened to on a computer with voice access to decrease the amount of reading required.

Industrial Arts

- Orientation of the room should take place before the term begins.
- One-to-one instruction may be needed to teach the student what the tools are and their location.
- The student should become proficient with hand tools before advancing to electric tools. Hand-over-hand instruction may be necessary.

- Students with low vision should be taught to use equipment as if they had no vision. Working in this way will prevent them from holding their faces dangerously close to the equipment.

Unique Curriculum Needs for Students with Low Vision

A student with low vision will participate in the regular school program with adaptations made as needed. He/she will need more directed instruction in the following areas than a child with normal vision:

- visual efficiency;
- concept development;
- listening skills;
- knowledge of the eye condition;
- sensory-motor skills/physical education;
- visual aids and adaptations;
- communication;
- orientation and mobility;
- self concept and socialization;
- daily living skills;
- career education;
- recreation and leisure; and
- sexuality education.

The development and implementation of the student's program plan is coordinated by the resource and classroom teachers. The program plan will include the student's unique curriculum needs. It is important to hold regular meetings with the support team, particularly those who will be working directly with the student. This provides the opportunity to discuss daily, weekly or long-range program plans.

Children with low vision are eligible for preschool services as provided by the school division.

Visual Efficiency

Visual efficiency is a combination of visual acuity and perception and can be improved through instruction. Teaching students with low vision to look will not change their visual acuity, but it may help them to use their vision more efficiently.

Use visual efficiency skills to:

- use spatial concepts and vocabulary;
- discriminate by tactile means (in attending to a visual task);
- visualize discrimination of:
  - size, colour, shades of colour,
  - shapes, symbols and forms,
  - objects,
  - seeing similarities in, and differences between, the inner details and shapes of similar objects;
- be able to match and sort;

- focus attention on and respond to visual stimuli;
- visually organize the whole from separate parts (e.g., puzzles);
- recognize pictures;
- discriminate among and recognize black-outline drawings of animals and household objects;
- develop visual closure skills:
  - identify common objects regardless of minor structural changes,
  - identify common objects that are partially hidden;
- trace and copy accurately (eye-hand coordination);
- recognize objects in the foreground and in the background;
- track visually;
- use vision to facilitate gross motor movement;
- use vision to locate and point to a person or object;
- use vision to facilitate fine motor tasks;
- use visual memory:
  - recognize a change in a familiar setting,
  - retrieve an object from where it was last seen,
  - identify a missing object;
- scan; and
- develop near, middle, distance and peripheral visual skills.

Concept Development

A concept is a mental representation, image, or idea of what something should be. Students with low vision need assistance making the connection between vocabulary and real objects, body movements and abstract ideas. They often miss a lot of the incidental learning available through vision and frequently develop inaccurate concepts. Following are useful strategies to aid in concept development.

- Pre-teach vocabulary and key concepts which relate to the curriculum through verbal explanations and concrete experiences using a multisensory approach. For example, orient the student to the library before library time.
- Pre-teaching can be provided by someone other than the teacher, such as a peer, an older student, a teacher assistant or parent.
- After the student has participated in pre-teaching and classroom instruction, it is crucial to review concepts and vocabulary. Say, “Describe what you understand by this term.”
- Concepts must be experienced repeatedly in various environments in order for the information to be generalized and for the student to gain expertise.
- Essential concepts that need developing are listed in Appendix 6.

Listening Skills

Students with visual impairments achieve much of their learning through listening. Develop listening skills in the following areas:

- auditory perception;
- sound discrimination;
- sound location;
- association of sounds and objects or situations;

- interpreting auditory information;
- listening for sequence;
- listening for detail;
- listening for main ideas;
- new vocabulary;
- listening to follow instructions;
- learning to listen to audiocassettes;
- using earphones to minimize distractions;
- reading the questions to be answered before listening to the information;
- playing short portions of a tape and stopping to make notes; and
- adjusting the speed of the tape player.

Knowledge of the Eye Condition

A student needs to understand and to be able to tell others comfortably about the cause of his/her visual impairment. This understanding leads to acceptance and the ability to deal with the visual impairment. The student needs to understand:

- structure and function of the eye;
- eye care and service;
- diagnosis, cause, implications and prognosis of student's eye condition;
- adaptations to the environment to enhance vision; and
- visual exercises, if needed.

Sensory-Motor Skills/Physical Education

Reduced vision can diminish the motivation to learn basic motor skills and reduce opportunity to practice these skills. Physical fitness is as important for the student with low vision as the sighted child. Sensory-motor skills are necessary for good concept development, physical conditioning and orientation and mobility skills.

The student with low vision should participate in the regular physical education program. Adaptations may be required depending on the functional vision of the student. He/she may not be able to participate in all activities and team sports. A parallel physical activity should be provided.

Visual Aids and Adaptations

A student with low vision may benefit from using optical and non-optical aids and adaptations as prescribed by the eye care specialist. Aids such as binoculars and adaptations such as lighting are explored to maximize a student's visual experience. Include these:

- training in the use of optical aids;
- appropriate lighting (depending on the eye condition, lighting needs will vary); and
- environmental adaptations:
  - avoid glare,
  - provide high contrast, and
  - seat the child for optimal vision. The student may need to sit further back in the classroom when using a visual aid.

Communication

The student with low vision will be included in the regular language arts program with the following considerations in reading, listening and writing assignments.

Reading Skills

A student with low vision needs print in a size that he/she can see. The appropriate print size is determined by the functional vision assessment. Most storybooks for young children are in large print. Choose books that have good contrast between the print and the page.

Reading requires the efficient use of visual skills such as tracking, scanning, fixating and shifting gaze. Students with low vision must exert more energy to read fluently and sustain reading over a longer period of time. Different adaptations may be required at different age levels.

- Use a multi-sensory approach when teaching the alphabet. Real objects should be used to illustrate the initial sounds of words.
- Modify the amount of reading and provide audiocassettes or have someone read to the student, if necessary.
- Use a line marker if the student has difficulty tracking and/or locating the place in the text.
- Encourage the student to highlight important information when reading.
- Use a typoscope or template over a page of print to locate the next line.
- Allow the student to hold the page as close to the eyes as is necessary to read the print.
- Allow the student to take breaks from visual tasks. Students may tire if they are engaged in visual tasks for extended periods of time.
- Encourage the student to take responsibility for requesting a break when needed.
- Intersperse visual activities with non-visual activities.
- Bold, well-spaced letters are often easier to see than larger letters.
- Use highly contrasting letters to make print easier to read.
- Large print books are available from the Saskatchewan Learning Resource Centre in Regina and from provincial libraries.

Listening Skills

- As discussed in an earlier section, a student with impaired vision will rely more heavily on listening skills. It is very important to develop those skills.
- Look directly at the student when you are talking and address him/her by name.
- Talk in a clear, natural voice. Be sure the student is looking directly at you as well.
- Give all instructions orally. Take note of how many steps the student can follow at a time.
- Provide exposure to audiocassettes, records, radio and TV to encourage development of listening skills.

Writing Skills

- Allow the student to write in the size of print that is easy for him/her to read. Allow the student to hold the page as close to the eyes as is necessary to read.
- Legibility is more desirable than style or speed. The student may prefer printing to cursive writing.
- Felt pens, primary pencils, raised and bold lined paper can be used to make the student's writing more legible and make it easier for the student to write. Bold line exercise books are available from the Learning Resources Distribution Centre (LRDC).
- Provide access to a computer at an early age, especially if the student continues to demonstrate difficulty with writing skills. Screen enlargement software may be purchased.
- Keyboarding skills are important for a student with low vision. There are several keyboarding software programs available that include speech. Large print letter overlays for keyboards are available from CNIB.

Orientation and Mobility

Children with low vision need to learn techniques that enable safe and efficient travel from an early age if they are to function independently in and be knowledgeable about their environment. Refer to Section VIII.

Self Concept and Socialization

A visual impairment may interfere with the student's ability to observe appropriate social behaviours and learn basic life skills. Social and life skills that other students learn naturally through observing others and modeling, must be taught specifically to the student with low vision. Teach and encourage the student the following skills.

- Turn and face the speaker. Some students do have eccentric viewing and need to tilt the head in order to see the person to whom they are speaking.
- Modify behaviours common to students with low vision such as rocking and repeated eye rubbing.
- Initiate a conversation or play activity. The student will often wait silently until someone else takes the initiative. Teach and practice appropriate conversation openers with the student.
- Participate in conversation with others. He/she should use age-appropriate vocabulary and topics.
- Understand and respect the personal space of others. The student will also need to be able to ask others, in a courteous way, to respect his or her personal space.
- Explore objects tactually to gain information and form accurate concepts. However, it is necessary for the student to learn when it is acceptable to touch, particularly when this relates to appropriate and inappropriate physical contact.
- Communicate his/her needs.
- Participate in a variety of group activities.
- Learn nonverbal communication skills. Give help to interpret facial expressions, body language and gestures.
- Learn and demonstrate courteous behaviour.

- Recognize emotions and express them in socially acceptable ways.
- Develop skills in problem solving and decision making.
- Develop a positive and accurate self-concept.
- Recognize his/her strengths and weaknesses.
- Recognize and share feelings about his/her visual impairment.
- Become aware of and respond to peer pressure.
- Access counseling and support for adolescents. This service may be available from a school counselor, a psychologist, or an education consultant. This is the stage when students will experience puberty, learn about relationships and dating and need to come to terms with the possibility of not being able to drive a car. It is particularly important for the student to develop a strong self-image at this time when peer acceptance is influenced by appearance and behaviour.

Daily Living Skills

All children, both sighted and visually impaired, need to learn self-care skills. With low vision children, this may take more direct teaching using task analysis. It is important for all children to be able to contribute to the family chores, both for purposes of developing self-esteem and learning to function independently.

The student needs skills in the following:

- personal hygiene;
- dressing, organization and care of clothing;
- table manners and eating;
- eating out;
- money management;
- preparing food;
- housekeeping;
- shopping;
- use of the telephone and other communications technology;
- health and safety;
- time concepts;
- self-advocacy;
- problem solving and decision making; and
- organizing of personal property and time:
    - organize books, materials and equipment. Locate the required items when they are needed and put them away when finished with them,
    - develop an understanding of completing tasks on time,
    - be able to plan time usage and how to balance time between tasks,
    - assume responsibility for materials and equipment,
    - use address books, calendars, journals and other personal organization tools,
    - be able to follow a time-table, and
    - keep track of assignments, grades and schedule changes.

Career Education

Unemployment and underemployment of adults with low vision is a continuing concern. Career education is essential to the employability of adults with visual

impairments. Students with low vision need to deliberately and directly explore a wide variety of career options.

Career education curriculums that have been developed for sighted children may need supplementary instruction from a teacher who works with students with visual impairments. Career education at the exploration level for younger students could well mean many field trips into the community so that the student with low vision will have exposure to people and work situations. The student must develop a realistic understanding of his/her limitations and potential.

Emphasize the following:

- self awareness;
- strengths;
- weaknesses;
- interests/abilities;
- values;
- goals;
- prevocational skills;
- career awareness;
- career exploration;
- job preparation;
- interview skills;
- resume writing;
- application forms;
- job seeking skills;
- awareness of sources of funding e.g., Employment Assistance for Disabled Persons (EADP);
- awareness that many post-secondary institutions have support services for students with disabilities; and
- employment issues related to the visual impairment (informing potential employers, adaptations in the workplace).

Recreation and Leisure

Recreation and leisure activities will vary with the student's age and functional vision. These activities may range from pretending and playing with toys to artistic abilities and using technology, equipment and tools. Recreation and leisure offer opportunities for students to use their abilities, be active, feel self-worth, release tension, show others what they can do, get along with others and receive recognition or rewards. Many recreation and leisure activities promote lifetime skills that play an important part in developing a satisfactory life. Recreation and leisure activities provide opportunities for students to integrate and apply skills acquired in many curricular areas. Students with blindness and low vision need additional encouragement to pursue these activities. The student should develop:

- an awareness of leisure activities and how to manage leisure time well;
- skills for solitary play and solitary leisure activities;
- skills for social play and social leisure activities;
- an interest to learn about or join a community club or group;

- an interest in physical play, physical games, physical fitness and sports;
- an enjoyment of pets and nature;
- an enjoyment of music and dance;
- an interest in a hobby;
- skills for reading, writing, speaking and drama as leisure activities;
- skills for using science and technology for leisure purposes;
- an interest in taking lessons (music, gym, drama, swimming, dance); and
- an interest in attending camps available for the visually impaired.

Some adapted games can be purchased from CNIB and borrowed from the Saskatchewan Learning Resource Centre.

Sexuality Education

Between 1 ½ and 3 years of age, sighted toddlers have repeatedly compared the anatomical features of their own bodies with those of their parents, peers and siblings. Usually children with visual impairment have not received directed sexuality instruction during the early formative years, and when these children enter school, they are already behind their sighted peers in sexuality awareness and development. It is never too early to begin the purposeful sexuality education of any child, especially that of a visually impaired child. The older a child with a visual impairment is before receiving sexuality education, the more difficult it becomes to comprehend the basic concepts.

Teaching sexual education involves a complexity of skills and concepts.

- Establishing gender identity. This needs to begin at a young age. Gender cues need to be directly taught to a student with visual impairment.
- Developing an age appropriate vocabulary, which includes the anatomically correct names for genitals and reproductive organs, as well as terminology for sexually oriented items and behaviours.
- The use of anatomically correct models, which are available from the Saskatchewan Learning Resource Centre.
- Teaching the reproductive process and birth control at an appropriate age.
- Preparing pre-puberty girls emotionally and physically for the onset of menses.
- Preparing pre-puberty boys emotionally and physically for the onset of puberty.
- Making the student with a visual impairment aware of what constitutes appropriate time and place for private sexual activities.
- Teaching appropriate ways of showing affection.
- Developing an intimate relationship.
- Knowledge of sexually transmitted diseases.
- Knowledge of sexual abuse.
- Parents and the public health nurse in teaching sexuality.
- Working with parents and the public health nurse.

Section V – The Student with Blindness

The student with blindness will participate in the regular program with adaptations as needed. The Early Intervention programs in Saskatchewan provide programming for pre-school children. Children with blindness are eligible for pre-school services as provided by the school division.

It is important to hold regular meetings with the support team, particularly those who will be working directly with the student. This provides the opportunity to discuss daily, weekly or long-range program plans, become familiar with the topics and vocabulary which will be taught, and discuss necessary adaptations. The development and implementation of the student's program is coordinated by the resource and classroom teacher.

Classroom Accommodations

Welcoming the Student

- Introduce the student with blindness as you would any other student.
- Encourage the student to answer questions posed by other students concerning the eye condition. It may be necessary to teach the student how to describe the eye condition in simple terms.
- Verbalize praise and disapproval or use gestures, such as a reassuring hand on the shoulder. A student with blindness is not reinforced or cautioned by facial expressions and body language.
- Be specific with descriptive language and avoid using terms like "here" or "there" when describing the location of a person or an object.
- Talk directly to the student rather then through an accompanying person.
- Feel comfortable when using words like "look" and "see". They are a part of the language and the student is used to hearing them.
- Provide the student with a coat hook or locker closest to the door so it is easy to locate.

Safety

It is important to include the student with blindness in the full spectrum of school life, including assemblies, field trips, work experience and social events. A student with blindness faces extra challenges when getting used to the physical environment of the school. Everything from attending gym class to visiting the washroom can present possible difficulties. Emergency procedures, such as fire drills, require that a plan of action be in place. The following suggestions will help ensure the student's safety.

- Familiarize the student with the school building as soon as possible.
- Keep classrooms, corridors and stairs free of clutter.
- Ensure that the student is aware of any object or piece of furniture that has been moved.
- Close or fully open doors and cupboards.
- Ensure that teachers and students are familiar with the sighted guide technique.

- Arrange for a peer buddy or adult to act as a sighted guide on field trips or in unfamiliar environments.
- Ask the student's permission before giving physical assistance.
- Remind students and staff to identify themselves by name when addressing the student or when passing the student in the hallway. This is not necessary if the student can already identify a particular voice. Always tell the student when you are leaving them.
- Teach the student when it is appropriate to talk to strangers or volunteer personal information.

Seating

The decision of where to place the student should be made with the student, parent, classroom and resource teacher and an educational or visual consultant.

- The student is often seated at the front of the classroom so that the student is in close proximity to the teacher.
- The student may prefer to sit at the back or side of the classroom, whichever suits the student and technology best.
- A sound field system may be considered for amplification of the teacher's voice and reduction of extraneous noises.

Teaching Tips

A program plan is developed and reviewed on an ongoing basis by the student's support team.

Handouts and reading assignments: For students who need their material brailled, it is important to furnish the braillist with the best possible copy as many days in advance as possible.

Texts and novels: Students may need books brailled. They are available from the Saskatchewan Learning Resource Centre. Because of the time involved to prepare brailled materials, order these materials five to six months in advance.

Talk while you teach: Students with blindness miss visual cues and written instructions. Consider talking through classroom activities, for example, describing non-verbal messages and responses, introducing lessons, transitions, closures to all activities, announcing assignments and naming speakers. Provide advance notice to the student and the teacher assistant of materials required for the next class so that everyone is prepared.

Real-life examples and concrete material can assist in establishing relationships between abstract learning and the student's experience. Consider the use of "hands-on" material where possible, to provide opportunities for kinesthetic and tactile learning.

Individual explanation: You may find the student with blindness needs additional explanation. When the class begins a task it may be useful to check with the student to ensure comprehension.

Pre-teach vocabulary and key concepts which relate to the curriculum through verbal explanations and concrete experiences using a multi-sensory approach. For example, orient the student to the library before the library time.

"How does this relate to what you know?" You may need to assist the student to organize thoughts and make connections between learning experiences.

Encourage quality over quantity for written work as braille users will complete their written assignments in class using a brailler. This may take longer than handwriting.

Participation in certain activities such as physical education, science labs and visual arts may need adaptations and assistance.

Discipline and behaviour expectations are the same for students with blindness.

Hand-over-hand techniques work well to demonstrate certain skills.

Encourage assertiveness. The student with blindness needs to learn when and how to request or refuse help and how to make needs known.

Encourage independent effort and incorporate pro-active behaviour to reduce the likelihood of becoming dependent.

Assignments and Examinations: Assignments and examinations can pose considerable difficulty for the student with blindness. Examination results should reflect the student's knowledge of the subject content. Some of the following strategies may be useful.

- Consider the student's well-being when assigning homework, particularly if extensive reading or writing is required. A student with blindness is often fatigued by the end of the school day and work quality may be reduced.
- Allow additional time for completion of assignments and examinations.
- Allow the student to complete an examination in more than one sitting, if necessary.
- Reduce the number of questions to be answered.
- Provide an alternate way of testing the student's knowledge.
- Provide a scribe.
- Give the examination orally. Accept a computer printout or answers recorded on an audiocassette.
- Avoid the use of computer answer sheets.
- Application for special provisions for provincial testing should be made 8-12 months prior to the exam.
- The procedures for special provisions for provincial testing are included in Appendix 5.

Unique Curriculum Needs for Students with Blindness

A student with blindness has unique curriculum needs that include:

- concept development;
- organizational skills;
- communication (listening, braille reading skills, writing skills, speaking);
- mathematics skills;
- recreation and leisure;
- sexuality education;
- career education;
- self concept and socialization;
- physical education/sensory motor activities;
- life skills; and
- orientation and mobility.

These unique curriculum areas need to be included in the personal program plan.

Concept Development

Students with blindness need assistance in making the connection between vocabulary and real objects, body movements and abstract ideas. These students miss incidental learning available to the sighted student and frequently develop inaccurate concepts. The following strategies will aid in concept development.

- Pre-teach vocabulary and key concepts which relate to the curriculum through verbal explanations and concrete experiences using a multi-sensory approach. For example, orient the student to the library before the library time or develop the concept of the skeletal system with real bones.
- Pre-teaching can be provided by someone other than the teacher, such as a peer, an older student, a teacher assistant or a parent.
- After the student has participated in pre-teaching and classroom instruction, it is crucial to review concepts and vocabulary. Say, “Describe what you understand by this term.”
- Concepts must be experienced repeatedly in various environments in order for the information to be generalized and for the student to gain expertise.
- Essential concepts that need developing are listed in Appendix 6.

Organizational Skills

Organizational skills are an integral part of student success and are essential for the student with blindness.

- Have the student organize, use and take responsibility for his/her personal work space.
- Provide the student with a definite place to put things, with the expectation that the student use this space.
- Use containers and zippered pencil cases to store objects.
- Provide a tray for objects that may roll easily off the desk.

- Use techniques for safely locating and searching for dropped objects.
- Attach braille labels to binders and folders for the student.
- Provide sufficient space for materials and equipment. Often a special room is required for storage and use of specialized equipment. A desk may need to be adapted to provide a larger working area. See Appendix 7 suggestions.
- Brailled texts require more storage space and should be stored upright. See Appendix 7.

Communication

Listening Skills

A student with blindness learns through listening, so it is important that he/she develop good listening skills. Listening skills are taught as an integral part of the language arts curriculum in the elementary grades and a student with blindness will benefit from these activities. In addition, it will be necessary to teach the following skills.

Perceptual awareness and interpretation of environmental sounds:

- discriminate between different sounds;
- locate the direction of sounds; and
- associate sounds with objects and situations.

Listening and interpreting oral information:

- to listen for sequence;
- to listen for details;
- to listen for main ideas;
- to listen to follow instructions; and
- new vocabulary. Check that the vocabulary is within the student's experience and has meaning.

Listening to audiocassettes:

- minimize distractions to increase attending;
- read the questions to be answered before listening to the information;
- listen to the pertinent parts of the tape prior to the lesson;
- play a short portion of the tape, then stop to write notes; and
- adjust the speed of the recorder.

Listening to a reader:

Having someone read to the student has the following advantages:

- the student has immediate access to the same reading material as other students;
- the reader can scan the text to find appropriate material;
- the reader can give information on spelling and punctuation; and
- this is an option when taking tests.

Braille Reading Skills

The student will require a pre-braille and braille reading program, in addition to participating in the regular reading program. See Section VII Specialized Materials, Equipment & Technology and Appendix 9.

Writing Skills

- Teach a student who uses braille to write his/her signature. Raised lined paper and signature guides are available.
- Teach keyboarding skills (grade 3 or 4) after the braille writing skills are established.
- Provide access to a computer at an early age. Adaptations may be necessary.
- The student should be able to spell words letter by letter as well as by using braille contractions.
- Encourage a student to use the Perkins Brailler as early as pre-school. As braille proficiency increases, teach the use of a slate and stylus and an electronic braillewriter. Refer to Section VII.
- Options for taking notes are: dictation by the teacher; provision of a print copy to be brailled for the student; scanned by the student and then listened to and/or brailled; tape record the lesson with notes to be brailled later; use of a scribe; braille a peer's notes.
- Check periodically to ensure that the student is making accurate notes.

Speaking Skills – A student should:

- look directly at the speaker;
- learn to participate in a discussion;
- learn when to speak;
- learn to use and interpret voice modulation;
- learn to initiate and contribute to a conversation;
- learn to express thoughts in an organized fashion;
- learn assertiveness skills; and
- develop the ability to ask for and refuse help.

Mathematics Skills

There may be a number of gaps in the student's general knowledge that would normally have been gained through visual observation. Math for the student with blindness is prepared in Nemeth code. Nemeth code is a mathematical and scientific notation code in braille.

The following adaptations and equipment may be incorporated into the student's mathematics program to enhance learning.

- Speed may be improved by adapting or shortening assignments.
- Make or purchase braille flash cards.
- Raised pictures, diagrams and concrete objects are necessary to develop concepts. Simple raised outlines are preferred.
- A variety of materials and methods for use with young students are described in the Teaching Resources Section XII.

- A combination of auditory and tactile approaches should be used. Many manipulative materials available in the classroom can be used by a student with blindness.
- A student may benefit from using an abacus and finger math.
- Assistance will usually be required in all math classes.

To assist in adapting materials, the school may need to purchase:

- a tracing wheel and rubber mat;
- raised line paper;
- braille measuring devices;
- self-adhesive felt dots;
- crochet cotton for tactile illustrations;
- Wikki Stix;
- speech output calculators;
- geometric shape kits;
- clocks with brailled numerals; and
- an abacus.

Arts Education

- Encourage the student to develop an interest in playing an instrument.
- Braille musical notation is available.
- Many concepts such as fast, slow, high, low, over and under can be taught through music.
- A true understanding of colour is impossible for the congenitally blind. These students need a colour vocabulary and should be taught the colours of common things such as gray elephants, white snow and blue sky. An understanding of colour coordination is important for the student's personal appearance.
- Paper can be placed over a fine screen while the student draws on it with a crayon, creating a palpable image.
- Cutting with scissors is difficult but can be mastered.
- Paper with raised line drawing will indicate where the student should colour.
- Clay and paper sculpture, textile arts, 3-dimensional forms and finger painting are art forms and activities that students with blindness can enjoy.
- Participation in drama provides the opportunity to learn everyday gestures and movements that the student with blindness may not have mastered.
- A heavy string or tape on the floor will indicate where the student should walk and move to on the stage in drama.

Science

- Raised line diagrams can be used. Avoid too much detail.
- Assistance may be required in a lab to describe changes and aid in measurement.
- The student should be allowed to examine the apparatus and materials before an experiment. Some science equipment is available with tactile markings.
- The student should be as close as possible to a demonstration.

- Use real life articles or models if possible.

Social Studies

- Raised line maps or atlases should be used. They can be made from string, pipe cleaners, wool, styrofoam, foil, clay, sand, plaster, plasticine and sandpaper.
- Maps should be simple and small enough to be encompassed by both hands.
- Tactile maps should give a limited amount of information. If more details are needed, a series of maps can be used, with additional data on each map.

Industrial Arts

- Orientation of the room should take place before the term begins.
- One-to-one instruction may be needed to teach the student what the tools are and their location.
- The student may prefer to work in the industrial arts room with a teacher assistant only. There is a lot of noise and distraction when the class is present.
- The student should become proficient with hand tools before advancing to electric tools. Hand-over-hand instruction may be necessary.
- Modify and adapt equipment when necessary.

Knowledge of the Eye Condition

A student needs to understand and be able to tell others comfortably about the cause of his/her blindness. Understanding of the following leads to acceptance and dealing with the blindness:

- name, cause, implications and prognosis of the student's eye condition;
- genetics counseling;
- eye care and service; and
- knowledge of factors secondary to the eye condition (diet, medication).

Recreation and Leisure

Recreation and leisure activities will vary with the student's age and functional vision. These activities may range from pretending and playing with toys to artistic abilities and using technology, equipment and tools. Recreation and leisure offer opportunities for students to use their abilities, be active, feel self-worth, release tension, show others what they can do, get along with others and receive recognition or rewards. Many recreation and leisure activities promote lifetime skills that play an important part in developing a satisfactory life. Recreation and leisure activities provide opportunities for students to integrate and apply skills acquired in many curricular areas. Students with blindness need additional encouragement to pursue these activities. The student should develop:

- an awareness of leisure activities and the skills to manage leisure time well;
- skills for solitary play and solitary leisure activities;
- skills for social play and social leisure activities;
- an interest in learning about or joining a community club or group;
- an interest in physical play, physical games, physical fitness and sports;

- an enjoyment of pets and nature;
- an enjoyment of music and dance;
- an interest in a hobby;
- skills for reading, writing, speaking and drama as leisure activities;
- skills for using science and technology for leisure purposes;
- an interest in taking lessons (music, gym, drama, swimming, dance); and
- an interest in attending camps.

Some adapted games can be purchased from CNIB or borrowed from the Saskatchewan Learning Resource Centre in Regina.

Sexuality Education

Sexuality encompasses much more than sex. It is fundamental to our understanding of ourselves and others. It includes topics such as body image, dress, body language, interactions with the same or opposite sex, dating, marriage, intercourse and child bearing. In our society, most sexual information is learned visually. A student with blindness may be unaware or ignorant in this crucial area and may therefore be at high risk for sexual abuse. Parents must be involved in planning and/or teaching sexuality. It is never too early to begin discussing and teaching sexuality with a student who has blindness. The older a child with blindness is before receiving sexuality education, the more difficult it becomes to comprehend the basic concepts. The concepts described in the top of this section and the ones listed below should be taught:

- menstruation, intercourse, conception, pregnancy, menopause;
- sexually transmitted diseases, birth control;
- sexual preferences;
- prevention of sexual abuse;
- privacy;
- genetics;
- dating, social mores, intimate relationships; and
- verbal and non-verbal sexual cues.

Career Education

Unemployment and underemployment of adults with blindness is a continuing concern. Career education is essential to the employability of adults with blindness. A student needs to explore deliberately a wide variety of career options. He/She also needs to develop a realistic understanding of his/her limitations and potential. Emphasize the following:

- self awareness (strengths and weaknesses, values and goals, interests and abilities);
- career awareness;
- career exploration (application forms);
- job preparation (interview skills, resume writing, specific training);
- job seeking skills; and
- Employment Assistance for People with Disabilities (EAPD) and other sources of funding.

Self Concept and Socialization

Blindness will interfere with a student's ability to observe appropriate social behaviours and to learn basic life skills. Social and life skills that other students learn naturally through observing others and modeling, must be taught specifically to the student with blindness.

- Teach the student to turn and face the speaker.
- A student with blindness may have mannerisms, such as rocking or repeatedly rubbing the eyes. Such mannerisms can interfere with social interactions. This is a sensitive issue; professional advice should be sought.
- Encourage the student to initiate a conversation or play activity. The student will often wait silently until someone else takes the initiative.
- Help the student to understand and respect the personal space of others. The student will also need to be able to ask others, in a courteous way, to respect his or her personal space.
- The student with blindness will need to explore objects tactually to gain information and form accurate concepts. However, it is necessary for the student to learn when it is acceptable to touch, particularly when this relates to appropriate and inappropriate physical contact.
- Encourage the student to communicate his/her needs.
- Encourage the student to participate in a variety of group activities.
- Learning nonverbal communication skills is important. Help the student interpret facial expressions, body language and gestures.
- The student needs to learn and demonstrate courteous behaviour.
- Help the student recognize emotions and express them in socially acceptable ways.
- The student will need to learn skills in problem solving and decision making.
- The student needs to develop a positive and accurate self-concept.
- The student should be able to recognize and share feelings about his/her blindness.
- The student needs to become aware of and respond to peer pressure.
- Provide counseling and support for adolescents. This is the stage when students will experience puberty, learn about relationships and dating and need to come to terms with not being able to drive a car. It is particularly important for the student to develop a strong self-image at a time when peer acceptance is influenced by appearance and behaviour.

Physical Education/Sensory Motor Activities

Blindness will diminish the motivation to learn basic motor skills and will also reduce the opportunity to practice these skills. Physical fitness is as important for the student with blindness as the sighted child. Sensory-motor skills are necessary for good concept development, physical conditioning and orientation and mobility skills.

The student with blindness should participate in the regular physical education program. Adaptations may be required depending on the physical skills of the student. He/She may not be able to participate in all activities and team sports. A parallel or alternate physical activity should be provided.

Daily Living Skills

All children, both sighted and visually impaired, need to learn self-care skills. With blindness, this may take more direct teaching using task analysis. It is important for all children to be able to contribute to the family chores, both for purposes of developing self-esteem and learning to function independently. The student needs the following skills:

- personal hygiene;
- dressing, organization and care of clothing;
- table manners and eating;
- eating-out;
- money management;
- preparing food;
- housekeeping;
- shopping;
- use of the telephone and other communication technology;
- health and safety;
- time concepts;
- self-advocacy;
- problem solving and decision making;
- organizing of personal property and time;
- organizing books, materials and equipment (locate the required items when they are needed and put them away when finished with them);
- develop an understanding of completing tasks on time;
- be able to plan time usage and how to balance time between tasks;
- assume responsibility for materials and equipment;
- use address books, calendars, journals and other personal organization tools;
- be able to follow a time-table; and
- keep track of assignments, grades, schedule changes.

Orientation and Mobility

Children with blindness need to learn techniques that enable safe and efficient travel from an early age if they are to function independently in and be knowledgeable about their environment. Refer to Section VIII.

Section VI – The Student with Visual Impairment and Other Disabilities

Visual impairments may exist in combination with other disabilities. There are some students with visual impairments who also have developmental disabilities, are deaf or hard of hearing, or have physical disabilities. When a student has more than one disability, it is important to assess each disability separately and to assess how the combined disabilities impact the student's total performance. The student with a visual impairment has difficulty gaining information about the world. This is made more difficult if the student cannot conceptualize easily because of a developmental disability, cannot hear meaningful sounds or cannot physically move to explore.

Strategies

A coordinated interdisciplinary team approach to assessment and program planning is necessary. The consultants required depend on the individual student's disabilities and may include occupational and physiotherapists; speech and language pathologists; social workers; ACCESS consultants for students with visual impairments; ACCESS consultants for students who are deaf and hard of hearing and audiologists. It is vital that the student's needs be thoroughly assessed so that an appropriate educational program can be developed. ACCESS consultants from Saskatchewan Learning are available to assist teachers of Saskatchewan students with sensory multi-handicaps. Consultation can be requested through the ACCESS referral form Appendix 18.

Instructional Practices for Students with Visual Impairments and Developmental Disabilities

The instructional process must include opportunities for the student to explore new objects and places and be exposed to a variety of experiences. Students must experience a variety of textures, shapes, weights, temperatures, sounds, smells and tastes to build meaningful relationships and concepts about the environment.

- Provide opportunities to practice and reinforce skills in natural settings throughout the day. Repetition is necessary for the student to master new skills.
- Talk while you teach. Students miss visual cues and information from the environment.
- Use tactile, concrete and real life material as much as possible. This provides opportunities for kinesthetic and tactile learning.
- If the student has residual hearing, use stationary sound sources to orient the student to important locations and landmarks, such as hanging wind chimes in the doorway, or placing a metronome near the carpet for circle time.
- Activities should be task analyzed and broken down into steps so that each step can be taught sequentially.
- Provide opportunities for the student to be with students who do not have disabilities for purposes of modeling their behaviour.

- Create opportunities for the student to develop meaningful relationships with adults and peers who may or may not have disabilities.

Unique Curriculum Needs for Students with Multiple Disabilities and Visual Impairments

Vision Stimulation

A student's residual vision may need to be stimulated so that the student will use it more efficiently. This should be done incidentally throughout the day in natural settings and activities. The student's need for vision stimulation must be assessed by the ACCESS consultant for students with visual impairments before vision stimulation is included in the student's program.

- Consult the physiotherapist or occupational therapist regarding the optimal physical position for viewing.
- A functional vision assessment will provide information about how the student sees and considerations for the student's level of visual functioning. See Appendix 8.
- Allow enough time for the student to respond to visual stimuli, as there may be a latent response.
- Use materials that are brightly colored, in high contrast to the background and provide simple outlines that are easily interpreted.
- Pair visual information with other sensory cues, particularly auditory cues.
- Create opportunities that require the student to look, such as placing a cup in a variety of positions on the table so that the student must visually search for it.
- Be aware of the student's visual preferences for colour, field of vision and shape and size of objects.
- Avoid overstimulating the student through the introduction of too much clutter.
- Equipment such as the Lightbox and Blacklight may be considered to provide enhanced contrast for vision stimulation.

Additional information can be found in Saskatchewan Learning's *Creating Opportunities: for Students with Intellectual or Multiple Disabilities.*

Orientation and Mobility

These students use the long white cane and a variety of adaptive mobility devices. These devices allow a student to move more freely and confidently through open spaces. Students need to learn to travel and move within various environments and the primary goal is independent travel. Consultation services in this area are available. See Section VIII.

Concept Development

Students need assistance in making the connection between vocabulary and real objects, body movements and abstract ideas. Incidental learning is missed and inaccurate concepts may be developed. See Appendix 6.

Communication

Students will need to be assessed for the most appropriate communication system e.g., speech, sign language, pictures and objects. A communication system will need to be developed which provides the student with the ability to communicate needs and wants in a variety of settings and with a variety of people. A calendar system which uses the student's communication system will help to provide the student with anticipation of the schedule, choice making and an understanding of task completion and sequence.

Lifeskills

Students with multiple disabilities need to develop functional skills that include lifeskills. There may be some adaptations with equipment and techniques for the student's level of visual functioning. Fieldtrips and hands-on experiences provide learning opportunities from which the student benefits. Consideration must be given to transferring of skills to various environments.

Section VII – Specialized Materials, Equipment and Technology

Students with visual impairments may need a variety of specialized materials and equipment in order to function effectively in the school environment.

The reading and writing medium, be it braille or print, will be determined by the support team in consultation with an ACCESS consultant. Some students with a visual impairment will use both print and braille. Order resources in the appropriate format from the Saskatchewan Learning Resource Centre in Regina. These include braille or large print books, audiocassettes and kits. Order the resources well in advance. Items needed for the beginning of the school year should be ordered in March. The Resource Centre produces an annual *Alternate Format Catalogue* for students registered with them. The Resource Centre catalogue, which includes alternate format titles (braille, large print and audiocassette) and professional reading can be found at http://www.sasked.gov.sk.ca/resources/lib4_hom.html

Braille

Braille is an embossed symbolic system that is read tactually. It is the specific placement of six raised dots that are numbered. Various arrangements of the dots make up 63 combinations, which are called cells and represent numerals, letters of the alphabet and word contractions. See Appendix 10.

A braille correspondence course that requires one to two years to complete is available. Contact an ACCESS consultant for information. The school division usually assumes the cost for training. This course should be taken by the resource teacher and the teacher assistant working with the student with blindness. Braille is produced on a Perkins Braillewriter or electronic braillewriter. See Appendix 11. The student learns braille literacy through a braille reading and writing program that is recommended by an ACCESS consultant and implemented by the resource teacher. See Section XII, Teaching Resources. Learning materials in braille or tactile format should be provided for a student who requires embossed materials. Some suggestions for brailing and for using braille materials follow.

- Braillewriters can be purchased through the Saskatchewan Learning Technical Aids Grant. Application must be made by the school division. A school should have three Perkins Braillewriters. One is in the classroom for the student's use. One is in the resource room and the third is for the teacher assistant's use. The student will also have a braillewriter at home. This can be provided by SAIL (Saskatchewan Aids to Independent Living) through CNIB.
- Braille paper can be purchased from Canadian National Institute for the Blind.
- A felt pad is placed underneath the brailler when it is being used, to reduce noise.
- A student should do his/her braillling in the classroom at the same time as the other students are writing.
- Tactile books with raised and textured objects, twin vision books which are print books with a transparent braille overlay, braille texts and general reading books are available from the Saskatchewan Learning Resource Centre.

- Provide adequate workspace to accommodate the braillewriter and braille book. See Appendix 7 for examples of working surfaces and storage.
- Binders to accommodate braille paper are available from American Printing House for the Blind (APH).
- A coil binding machine is useful to bind brailled work into booklets.
- The student can borrow novels for recreational reading through CNIB's national library.
- When it is impractical to use a braillewriter, a slate and stylus, which is a portable braille writing tool, can be helpful for taking notes. It is inexpensive and easily carried in a pocket or bag. The slate and stylus can be purchased from CNIB and placed in a convenient place such as by the telephone for taking messages, or in the kitchen for making a shopping list or taking down a recipe. See Appendix 11.

Large Print

The ACCESS consultant will assess the size of print that will allow the student with low vision to maintain a constant reading speed at a comfortable distance without undue fatigue. The consultant will also assess the need for bold or raised line paper, primary pencils, felt pens, magnifiers, bookstands and other specialized equipment. Some suggestions for using large print materials follow.

- Enlarge print and graphic materials on the photocopier or computer for students with low vision. Select materials with clear type and pictures, adequate spacing and margins, good quality paper with non-glossy finish and maximum contrast between print and background.
- The student may not require large print for all materials in all classes. For example, a student may only need mathematics books, dictionaries and maps in large print.
- The nature of the eye condition may make it necessary to provide large print at certain times of the day when the student is fatigued.
- Students with low vision may be able to use the same print as other students in the primary grades. By grade 4, the size of print and quantity of reading material may make it necessary for the student to begin using large print.
- Involve the student in deciding when it is best to use large print. A student may only wish to use large print books for leisure reading or to have a large print copy of the text at home.
- Large print books may be borrowed from the Saskatchewan Learning Resource Centre and the provincial libraries. Large print books have print sizes from 18-21 points.
- It is important to provide adequate space for storing student materials and equipment, which is easily accessible to the student.

Low Vision Aids

The student should be assessed for visual aids at the Low Vision Clinic following a referral from the student's eye care specialist. Low Vision Clinics are located in Saskatoon and Regina. An ACCESS consultant may recommend this referral.

Magnifying devices can be used to enhance the size of print on the page and on the blackboard, and they can be used to make the details in near and distant objects more

visible. Students using magnifying devices may experience decreased reading speeds because of the reduced visual field. Young students may not have the necessary fine motor control to use magnifiers efficiently. Some older students, generally from grade 5 onward, should be encouraged to become proficient in the use of magnifiers because they provide access to a variety of regular print materials.

Various hand-held, pocket and stand magnifiers that can assist students are available. Magnification devices are available through CNIB at a parent's request. Consideration must be given to working distance, field of view, depth of focus, weight, style and appearance of the device. Telescopic lenses on glasses and monoculars may enable the student to locate stationary and moving objects at a distance, such as street signs, bus numbers and print on the blackboard. The closed circuit television is an electronic magnifying device which is described in the section on technology. Instruction in the use of magnifying devices should be provided by the resource teacher. Some suggestions for magnification follow.

- Begin instruction in the use of magnifying devices with highly motivating materials such as comic books, fortune cookies, stamps, menus, names of products in the grocery store or the action at a hockey game.
- Provide opportunity for repetition of tasks.
- The higher the magnification, the smaller the area that can be seen at one time and the more important it is to hold the magnifier at a given distance.

Audiocassettes

Audiocassettes provide the student with an alternate learning mode. They can be borrowed from the Saskatchewan Learning Resource Centre, CNIB and provincial libraries.

- Introduce the use of audiocassettes by providing the student in the elementary grades with short stories, and older students with novels and material for at least one subject of study.
- Teach the student active listening, which is listening intently to the audiocassette to pick out the main ideas and make short study notes.
- Provide a print or braille copy of new vocabulary on cassette so that the student will learn the spelling of new terms and names.
- With experience, the student will be able to take advantage of the compressed speech feature on the recorder and listen to the tape at an increased speed.
- Books recorded on four-track tapes can only be played on four-track cassette recorders. These can be purchased from CNIB and APH.

The student will need training in listening skills. A program such as *Listen and Think,* available from the Saskatchewan Learning Resource Centre, or other listening programs which may be available in the school are designed to help students learn basic listening skills in a sequential way.

Illumination

If a student with low vision needs extra illumination, various desk lamps, preferably with rheostat control, are available.

Technology

The use of computers is particularly important to students with visual impairments, as their ability to use written communication can be enhanced and access to information improved.

The support team should select computer hardware and software specific to student's individual needs, considering the student's short and long-term educational goals and objectives. When requested by the ACCESS consultant, a CNIB technology specialist will conduct an assessment to recommend technology to meet the student's needs. Appropriate selection of devices and technology, and subsequent training, is crucial for ensuring proper use of such devices. Remember that software and hardware must be compatible, and that systems used at home and at school need to be coordinated for efficient transfer of homework assignments. Suitable commercial products are noted in parentheses within the following categories of equipment. Technology sources are found in Section XIII. This equipment may qualify through Saskatchewan Learning's Technical Aids Grant. Keep in mind that technology is ever changing and frequent updates may be needed.

Technology for Students with Blindness

A computer system for a student with blindness will include a computer or laptop with the following components.

Screen Reader/Speech Synthesizer

Screen readers provide auditory feedback when using the keyboard as well as auditory access to information displayed on the monitor. These systems consist of a software program and speech synthesizer. The software program sends information from the computer to the synthesizer, where phonemes are combined into words and the words are spoken. Most systems allow choices in volume, voice quality and speed of output. Students with limited or no reading vision will find these devices useful, especially when connected to braille and regular printers for output (JAWS, Intellitalk, IBM ScreenReader/DOS).

Voice Access

Voice access systems allow the user to interact with the computer screen by using voice commands instead of the keyboard. They are particularly useful for students who have difficulties with fine motor control as well as visual impairments. These systems include special software and sound cards to allow for voice output of information on the screen. As with screen readers, they can be connected to braille and regular printers for output (DragonDictate, Naturally Speaking).

Scanner

The scanner will scan print text of good quality. It must be used in conjunction with optical character recognition software. Then the scanned text can be saved to be printed in braille or listened to through speech access.

Optical Character Recognition Software

This software recognizes scanned text and when used in conjunction with a computer system equipped with a speech synthesizer and braille printer, can convert standard print materials to speech or braille. The user can control the speech rate, volume, voice quality and amount of text read at one time (letter by letter, single word, sentence, etc.) (Arkenstone, OpenBook Ruby Edition, Kurzweil).

Electronic Braillewriters

These small electronic devices have standard six-key braille keyboards that allow the user to write, read, edit and sort approximately 200 pages of braille. They can be connected to personal computers as well as regular and braille printers. Electronic braillewriters (Braille 'n Speak, Braille Lite, Type 'n Speak and Braille Note):

- have speakers for voice output;
- have an adjustable rate of speech;
- are portable;
- can run on a rechargeable battery;
- can be used to silently take notes in the classroom; and
- have either a small braille display and/or speech output.

The Mountbatten Braillewriter includes an embosser, translation system, note-taker capabilities and speech editor. It would be useful for students with limited dexterity or strength who have difficulty using the manual Perkins Braillewriter.

Print-to-Braille Software

Print-to-braille software allows a computer user to produce braille documents from print or electronic data (CD-ROMs, internet, scanner). When combined with a braille printer, a variety of teacher-designed materials can be prepared for a student. This software is generally used by school personnel, but may be also used by students (Duxbury, MegaDots).

Braille Printer or Embosser

A variety of braille printers or embossers are available commercially.

Calculator

Calculators with voice output allow students to do a wide variety of mathematical calculations. Most units have earphones and some keypads have tactile indicators for significant keys.

Cassette Recorder

Cassette recorders can be used as writing tools as well as reading tools. Students with no vision can benefit from the use of cassette recorders. Useful features of specialized cassette recorders include:

- play and record at variable speeds;
- play and record on two tracks per cassette side;
- tone indexing (insertion of a beep to mark a section of text);

- tactile markings on control keys operate on regular current and rechargeable batteries; and
- built in microphone and earphone attachment.

Descriptive Video Service (DVS)

DVS carefully describes the visual elements of a movie. The action, characters, locations, costumes and sets are described without interfering with the movie's dialogue or sound effects. Videos with DVS can be borrowed or purchased.

Language Master

The Language Master is a speaking reference guide. It contains dictionary definitions, spellings, a thesaurus, word games and word lists.

Low Tech Adaptations

- Keyboard access can be maximized through the use of tactile indicators. They are available from CNIB.
- A swing cell can be used to teach the braille cell to beginning braille readers. It is available from the Saskatchewan Learning Resource Centre.

Technology for Students with Low Vision

A computer system for a student with low vision may include a computer or laptop with the following components.

Screen Enlarger

Screen enlarger software programs display information on a computer screen in a variety of magnification levels. The entire screen, a portion of the screen or just one line may be enlarged. Students with low vision may benefit from these programs (ZoomText, MAGic, VisAbility).

Screen Reader/Speech Synthesizer

Screen readers provide auditory feedback when using the keyboard as well as auditory access to information displayed on the monitor. These systems consist of a software program and speech synthesizer. The software program sends information from the computer to the synthesizer, where phonemes are combined into words and the words are spoken. Most systems allow choices in volume, voice quality and speed of output. Students with limited vision will find these devices useful, especially when connected to a regular printer for output (JAWS, Intellitalk, IBM ScreenReader/DOS).

Voice Access

Voice access systems allow the user to interact with the computer screen by using voice commands instead of the keyboard. They are particularly useful for students who have difficulties with fine motor control as well as visual impairments. These systems include special software and sound cards to allow for voice output of

information on the screen. As with screen readers, they can be connected to braille and regular printers for output (DragonDictate, Naturally Speaking).

Scanner

The scanner will scan print text of good quality. It must be used in conjunction with optical character recognition software. Then the scanned text can be saved to be printed in braille or accessed through a speech synthesizer.

Optical Character Recognition Software

This software recognizes scanned text and when used in conjunction with a computer system equipped with a speech synthesizer and braille printer, can convert standard print materials to speech or braille. The user can control the speech rate, volume, voice quality and amount of text read at one time (letter by letter, single word, sentence, etc.) (Arkenstone, OpenBook Ruby Edition, Kurzweil).

Printer

Inkjet or laser printers are preferable.

Calculator

Calculators with voice output allow students to do a wide variety of mathematical calculations. Most units have earphones and some keypads have tactile indicators for significant keys. Enlarged print displays and scientific calculators for advanced work are available.

Closed Circuit Television

Closed circuit television systems electronically enlarge printed, handwritten and graphic materials onto a monitor screen. The components include a camera with a zoom lens and light source, a monitor and a flat movable counter. Portable and colour units are also available. Students with low vision may find these systems useful. The student can control the size, focus, brightness and contrast and polarity of the display (black on white to white on black). See Appendix 12 for illustrations.

Cassette Recorder

Cassette recorders can be used as writing tools as well as reading tools. Students with no vision, as well as those with limited vision can benefit from the use of cassette recorders. Useful features of specialized cassette recorders include:

- play and record at variable speeds;
- play and record on two tracks per cassette side;
- tone indexing (insertion of a beep to mark a section of text);
- tactile markings on control keys operate on regular current and rechargeable batteries; and
- built in microphone and earphone attachment.

Descriptive Video Service (DVS)

DVS carefully describes the visual elements of a movie. The action, characters, locations, costumes and sets are described without interfering with the movie's dialogue or sound effects. Students with any degree of visual impairment will enjoy these tapes. Videos with DVS can be borrowed or purchased.

Language Master

The Language Master is a speaking reference guide. It contains dictionary definitions, spellings, a thesaurus, word games and word lists.

Low Tech Adaptations

Keyboard access can be maximized through the use of enlarged keyboard labels and tactile indicators. They are available through CNIB.

Non-optical adaptations for improving access to the screen display include:

- adjustable lighting;
- polarized screen filters;
- monitor hoods to reduce glare;
- adjustable document holders; and
- adjustable computer stand for close viewing.

Section VIII – Orientation and Mobility

Orientation and mobility (O & M) instruction prepares a student with a visual impairment to travel independently and safely. Orientation skills help a student to be aware of his/her own body in space and the surrounding environment. Mobility skills are specific techniques used to enable a student to move easily from one place to another. Orientation and mobility includes both mental orientation and physical locomotion.

Orientation and mobility skills contribute to development in social skills, mental and physical interactions and the general well-being of the student. These skills are needed for the student with low vision as well as the student with blindness.

Formal orientation and mobility training will be planned and introduced by an O & M instructor from CNIB, contracted through Saskatchewan Learning. The initial referral must be made though an ACCESS Team member. Skills taught by the O & M instructor include sighted guide skills, protective techniques, cane instruction, street crossings and public transportation. However, it is up to the resource teacher to develop and implement the program. The amount of O & M training that a student will require depends on each student and how much vision he/she has. A student will need to acquire the basic concepts.

O & M should be incorporated into the student's program plan and timetable. An individual program is determined by considering the following factors:

- diagnosis and degree of visual impairment;
- prognosis of visual impairment;
- functional vision;
- presence of other disabilities;
- age;
- cognitive functioning;
- general health;
- school and community environment; and
- family, school and community resources.

Orientation skills can be incorporated within many regular classroom activities, particularly in preschool and early elementary classes. Games, songs and activities can be used to teach or reinforce concepts such as body awareness and naming body parts, positional concepts, sensory awareness and basic movement patterns. See Appendix 6.

Specific learning experiences planned for individual students can be taught and reinforced incidentally throughout the school day.

- Environmental awareness - includes awareness of air temperature, air currents, sun, scents, sounds, floor and wall coverings, furniture arrangement and objects in the hallway.
- Identifying landmarks - any permanent sensory information that assists an individual during independent travel. Learning that the first door on the left is

the library entrance or that the flooring changes from linoleum to carpet at the reading centre, helps students locate themselves within the school environment. Landmarks should have significance for the student.

- Identifying structural components of rooms and buildings - use models such as doll houses, Lego models and play house centres to help students understand concepts that they may not be able to experience visually. These may include corner, doorway, window, heating elements, basement, hallway, etc.
- Identifying directionality - left/right, followed by cardinal directions (north, south, east, west).
- Interpreting depth perception - coping skills to perceive relative distance of objects and their relationship to each other (stairs, curbs, terrain).

A student with sight learns what is in his/her environment by observation. This learning is limited for a student with a visual impairment. The more impaired the vision, the more impaired this learning will be. To help the student understand his/her environment:

- point out environment symbols (signs, symbols, labels);
- point out objects in the environment so the student can make an association between the shape and its name;
- provide labels in the student's surroundings. Be sure they are clear with good contrast; and
- teach the meaning of gestures and facial expressions to the student.

Mobility skills must be chosen to meet each student's specific needs and situation. Some common mobility skills need to be taught:

- **Sighted guide** - one option for getting from place to place is to utilize the assistance of a sighted guide. Teachers, staff, family members and peers can act as sighted guides and should be taught guide techniques. See Appendix 13.

- **Cane skills** - the long white cane is a device that is used successfully by students with visual impairments, including those with additional disabilities. A white cane may be used for identification purposes for a student with low vision. See Appendix 14. Once the need for the long white cane is determined, orientation and mobility instruction must commence to develop this highly essential and specialized skill. If the long white cane will be the eventual mobility device of choice, a positive attitude for its use must be established early.

- **Trailing** - is a method that can be used to get to a desired location while maintaining contact with a surface. This means of travel is taught to facilitate orientation by memorizing landmarks located along a frequently travelled route. The trailing technique is demonstrated by extending one's arm at a 45 degree angle in front and to the side of the body, with the back of the hand following the trailing surface.

- **Self-protection** techniques - are methods to protect the student's body from contact with obstacles. Either arm can be used in combination with upper or lower protective techniques. In upper protective technique the arm is held across the

upper body with the elbow bent and the palm facing forward. In the lower protective technique the arm is held across the middle of the body with the elbow straight and the palm facing inward. See Appendix 15.

- **Search technique** - used to safely locate a dropped object. See Appendix 16.

- **Travel experience** - travel may be according to directions, or to an immediate goal. The student should be able to plan his/her route using tactile maps, following simple routes using landmark sequencing and reverse directions to return to point of origin. The student should be able to travel within the home, school, neighbourhood, town and city. In order to accomplish this, the student will need to be proficient at crossing a variety of streets. A student needs to develop travel routes such as home to school, quiet residential areas, small business areas, shopping areas, home to shopping areas and inside stores and businesses. He/She needs skills for using elevators and escalators, revolving doors, public transportation, travel in unknown areas and travel in adverse weather conditions.

- **Social skills** - appropriate behaviour in public is very important. A student will need to know who, where and how to ask for help, how to refuse help, common courtesy in public, shopping skills, restaurant skills and phone resources for planning travel.

Mobility Aids

- Guide Dog – can be considered after age 16. Contact CNIB.
- White Cane – see Appendix 14.
- Optical Aids – a student with low vision may benefit from the use of a monocular or binocular for travel.
- Adaptations for wheelchair travel.
- Pre-cane devices – contact CNIB.

Section IX – Transition Planning

Transition is a bridge from one situation to another. It is not possible to provide a program and environment that is free from transitions and free from change, they are a part of life. The goal is to help the student cope with the changes and to adapt to a variety of settings. In many situations, anxiety can be decreased and inappropriate behaviours prevented or reduced, if the student is prepared for change or transition. This includes transitions between activities and settings, transitions from one grade to the next, transition from one school to another and transition to adult life.

Strategies to Help with Transitions Between Activities and Settings

- Give the student ample warning prior to any transition.
- Prepare the student in advance for a new situation or setting and the next class so they can anticipate what they will be encountering.
- Preteach any new vocabulary and concepts that will be experienced.
- Schedules can be used to prepare the student for changes in activities. It is important to involve the student in referring to the schedule. This can be done at the beginning of the day, as well as at transition times.
- Schedules vary in terms of complexity and length, and are tailored to the ability of the individual student. They can be presented in braille, large print, pictures/pictographs or objects that depict certain activities. It is important to implement a method that indicates the completion of an activity, such as turning over a picture card or crossing out an activity.
- A schedule may not be sufficient to prepare the student for change. In some situations, teachers have provided the student with an object which will be used in the next activity or setting to help him/her understand what is coming next.
- The use of a watch, clock or timer may also help the student to understand time periods.
- The use of visual/tactual cues in combination with verbal instructions may help the student to understand what is expected.
- Allow choice whenever possible.

Strategies to Help with Transitions Between Grade Levels

- When preparing for the transition between classrooms, it is necessary to prepare the student and the receiving teacher.
- Preparation for transition should begin in early spring.
- The teacher will need to be provided with information about the student's strengths and needs. The receiving teacher may also need to be provided with information about the visual impairment and the educational implications. This provides the (parents and) teachers with the opportunities to discuss goals, instructional strategies and curricular modifications.
- It is beneficial for the receiving teacher to visit the student in the current classroom environment in order to observe the child's participation as well as the current instructional strategies that are effective for the student.
- The student may make visits to the future classroom. The student needs to be oriented to the classroom. It may be helpful for the student to be accompanied

by the teacher assistant or current teacher, in order to maintain some familiarity.
- If possible, prepare a videotape of the student to familiarize the receiving teacher.
- A planning meeting of the support team is conducted to exchange information about the student as well as to discuss instructional strategies and approaches that have been most effective. This meeting may be held in spring or early fall.
- Braille or large print textbooks for the following year need to be ordered in March.

Strategies to Help with Transitions Between Schools

The suggestions for transition between grade levels are also applicable to planning for transitions between schools. However, additional time and preparation may be required, as the student will need to adjust to a whole new building rather than just a classroom. If the transition is from elementary to high school, the student will also need to learn about changes in the way the school operates. For example, the student will need to be prepared for the number of teachers that he/she will have, and the various locations for instruction.

- Arrange for the student to visit the school on a number of occasions. The student will require orientation to the school, classrooms, gymnasium, offices, washrooms and playground. This will require successive visits until the student is able to travel independently within and around the school.
- A decision will need to be made about how a student will travel to and from school. Consideration should be made to foster independent travel.
- Braille or large print textbooks for the following year need to be ordered in March.
- Provide the student with a school handbook and braille or large print information (appropriate to the student's academic level). This will help the student to rehearse for the change.
- Identify key people that the student can talk to or go to for help.
- Identify peers who may help the student adjust to the new school and who may be able to accompany the student to various locations in the school.
- Give the student the opportunity to shadow a student in another class.
- Inservice training should be provided to the staff and peers of the new school.
- Space will be required for storage and equipment.

Transition for High School to Adult Life

It is recommended that transition planning from high school to adult life begin as early as possible. Formal planning for transition to adult life often begins in grade 9.

It is important that parents, advocates, school personnel, adult service providers and the student begin to consider long-term planning for the individual early in his/her school life in the following areas:

- graduation or school exit date;
- employment options;
- post secondary training/education;

- income support/insurance;
- residential options;
- transportation needs;
- medical needs;
- community recreation and leisure options;
- maintenance of family/friend relationships;
- advocacy/guardianship; and
- skills for independent living.

Transition planning is a shared responsibility between the student, parent/guardian, the school and adult service providers.

The transition section of the student's program plan is developed through a meeting of the collaborative team. There are a variety of tools or processes for conducting the meeting. One approach is to conduct a MAPS meeting. See Appendix 4.

Regardless of the process or format used to conduct the transition planning meeting, the end result should be a section of the student's personal program plan that targets desired outcomes for adult life, specific current needs, a plan for addressing those needs, identification of the agencies/persons responsible and time lines. Subsequent planning meetings will need to be arranged to review the plan, check that the specific objectives have been achieved, that the long term goals are still appropriate and necessary revisions are made.

The role of the school personnel is to continue to provide opportunities for the student to develop skills for work and independent living. The day to day program and instruction for the student increasingly focuses on developing O & M skills, independent living skills and work experience.

The range of expectations will depend on the student's ability and needs. For example, a student with a visual impairment may require an extra year of school to allow time to concentrate on the development of skills. Consequently, there will be a greater emphasis on academic preparation in addition to work experience, development of job-related skills and skills for leisure and recreation. For others, the program may focus on work experience, community-based training and self-care.

In general, the school program prepares the student for transition through:

- providing a variety of work experiences to help the individual determine preferences;
- encouraging participation in extracurricular activities and social events;
- encouraging volunteer work;
- training in social skills;
- teaching appropriate dress and hygiene;
- training in the use of public transportation;
- training in independent living skills;
- teaching functional academics appropriate to the ability level of the student;
- training in orientation and mobility skills;
- training in self-advocacy;

- training in employment skills;
- developing good communication skills;
- knowing the resources needed and how to access them (CNIB, medical services, service groups); and
- knowing availability of materials and equipment and how to access them (braille materials, technology for the blind).

Section X – Appendices

APPENDIX 1

File Review Form

Identifying Information

Student Name: _____

Date of Birth: _____ Grade: _____

Address: _____ Telephone Number: _____

Parents or Guardians: _____

Medical Reports

Medical Diagnosis (including information about physical disabilities, neurological disorders and allergies):

_____

_____

_____

Visual Impairment: _____

Physician's Name: _____

Date of Report: _____

Diagnosis: _____

_____

Degree of Visual Impairment: _____

Age of Onset: _____

Functional Vision Assessment

Results: _____

_____

_____

Programming Recommendations: _____

_____

_____

Educational Report

Formal Test Results: _____

_____

Teacher Progress Reports (report cards): _____

Academic Level of Student: _____

Social Skills: _____

Work Skills: _____

Individualized Program Plan (IPP)

Areas of Strength: _____

_____

_____

_____

Areas of Need: _____

_____

_____

From Special Education Branch, Alberta Education, *Teaching Students with Visual Impairments* (Edmonton, AB: Alberta Education, 1996), pages VI.31 and VI.32. Adapted/reproduced with permission.

APPENDIX 2

Interview with Parents

General Information

To help create a complete picture of your child, please share recent medical reports as well as the following information:

General health and medical concerns: _____

_____

_____

Information regarding your child's visual impairment (including date of most recent eye examination): _____

_____

_____

The names of professionals and agencies providing service to your child:

_____

_____

_____

Educational and Social Needs

Tell me about your child's visual impairment and what you think it might mean in my classroom.

_____

_____

_____

_____

How independent is your child (at home, at school, in the community)? Are there any particular difficulties I need to be aware of? How much assistance do you feel your child needs?

_____

_____

_____

Ongoing Goals: _____

_____

_____

_____

Education Strategies: _____

_____

_____

Resource Materials: _____

_____

_____

_____

Service Delivery Team

Parents: _____

Teacher: _____

Teacher assistant/Paraprofessional: _____

Educational Consultant for Students
with Visual Impairments: _____

Itinerant Teacher/Strategist: _____

Others: _____

_____

Equipment

- ☐ cane
- ☐ CCTV
- ☐ brailler
- ☐ computer
- ☐ brailler printer
- ☐ specialized software
- ☐ slanted desktop
- ☐ desk light
- ☐ magnification devices
- ☐ kits
- ☐ other – specify _____

What reports and other information about your child do you feel are important for me to have? For example: visual acuity; assessment of visual field; functional vision; and recommendations.

_____

_____

_____

There will likely be questions from other students about your child's visual impairment. Have you any suggestions about what might be said and how it should be presented in class?

_____

_____

_____

Are there any other people working with your child that I should know about?

_____

_____

What educational and social goals do you have for your child? _____

_____

_____

Are there any other questions you would like to ask me? For example: what are my classroom expectations; assignments; materials; activities; and assessments of progress, projects, portfolios or tests?

_____

_____

What specialized equipment does your child use at home and at school (Braille 'n Speak, braille printer, CCTV)?

_____

_____

Summary of Information from First Meeting with Parents

Students Name:	Date:
Parent's Names:	Telephone Number: Business Number:

Important People (family, friends, others on educational team):

_____

_____

Description of Vision Loss:

_____

_____

Student's Interests, Hobbies, Strengths:

_____

_____

Questions and Concerns:

_____

_____

Initial Short-term Goals:

_____

_____

Long-term Goals:

_____

_____

Other information:

_____

_____

First Educational Team Meeting – Sample Questions

- What can the student actually see?
- What are the student's academic skills, abilities, and interests? Are there particular strengths, weakness, or concerns we need to attend to?
- Will there be an assistant? What will be his or her role?
- What information do we already have about this student? What more do we need?
- How independent is the student and how much assistance should we give?
- Who will be developing the individual education plan (IEP) and coordinating the student's whole program at our school?
- What are our short-term educational goals for this student?
- What special preparation do we need to make for classes, assignment, tests?
- What past strategies have been helpful? What does the student need?
- Who else is working with the student? How do we collaborate and when?
- Does the student have or need any special equipment? What does it do? Who maintains it? Is there backup?
- What happens when I, or the assistant, needs to be away?
- What are the behavioural expectations? Are there specific discipline issues we need to attend to or strategies that would be useful?
- What do we need to sensitive to or watch for? What else do we need to know to work more effectively?
- How best can we integrate this student into the physical school environment? What about safety, emergencies, recess, P.E., technology education?
- Is this student registered with the Saskatchewan Learning Resource Centre? Are there materials we need to order from the Resource Centre? How is this done? Who will do it?
- How best can we integrate this student into our school community? What should be said to other students and staff? Do we need a buddy system?

Notes from First Educational Team Meeting

Name of Student: Date:

People Present:

Academic Background/Assessment Information:

Functional Vision and Educational Implications:

Learning Needs/Effective Strategies:

Equipment/Special Materials: (What, Where, How, Who, When?)

What?

Where?

How?

Who?

When?

Specific Concerns or Questions:

Next Meeting:

Information from an Education Consultant or Itinerant Teacher/Strategist for Students with Visual Impairments

To help provide appropriate programming, please provide the following information:

Degree and Nature of Visual Impairment
An explanation of the student's visual impairment: _____

_____

_____

An explanation of the student's use of residual vision in the classroom:

_____

_____

_____

Educational and Social Needs
What equipment should be used? How is it obtained by the school? _____

_____

_____

_____

What adaptations to materials should be made?_____

_____

_____

What are some strategies for instruction particular to the student? (For example: verbal instructions)_____

_____

_____

_____

What are some strategies the student has used in moving throughout the school environment? _____

_____

_____

What resource materials are available to support programming? Where can this material be obtained?_____

_____

_____

_____

What resource personnel provide support to the staff and the student? For example: education consultants for students with visual impairments; itinerant teacher/strategist; braillist; teacher assistant. _____

_____

_____

_____

What are some strategies for including the student in group activities?

_____

_____

_____

_____

What are some strategies for helping all students interact comfortably in informal and formal situations?_____

_____

_____

_____

Ask the Vision Resource Teacher - Sample Questions

- What can the student actually see? (size, contrast, fine detail, colour)
- Does the student use braille? What is my responsibility?
- Should I expect this student with vision loss to do all that other students do?
- How independent is the student? How much help should I give?
- Is an assistant needed? Can you suggest ways of working together?
- How does the student feel about vision loss?
- Is there special equipment, materials, texts, papers I need to get/know about?
- What are some of the daily strategies I can use as I teach?
- What about discipline or behaviour issues? Expectations? Cautions?
- Can you tell me about the student's abilities, skills, interests?
- What about special activities, field trips, labs, assignments?
- How should I introduce the student to the class?
- Are there situations in class which might present difficulty for the student?
- What assistance can you give me? How often are you able to come to class?
- Do I need alternative assessment strategies?
- How can I effectively include the student in group work?
- Are there references or resources you could suggest that might help us?
- Are there other questions I should be asking or other information I need? Where can I get in touch with you?

Notes from First Meeting with the Vision Resource Teacher

Name of Student: Date:

Vision Resource Teacher: Business Telephone:

Description of the Vision Loss, Functional Vision, Educational Implications:

Most Effective Mode of Learning:

Instructional Strategies:

Equipment Details: (needs, function, maintenance, storage, space)

Needs? _____

Function? _____

Maintenance? _____

Storage? _____

Space? _____

Specific Concerns or Questions:

Next Meeting:

Questions to Ask the Student

In order to help you feel comfortable and experience success in class, please answer the following questions.

Visual Impairment
Do you use any specialized equipment?

_____

_____

What is your understanding of visual impairment in general and your own visual impairment in particular? _____

_____

Educational and Social Needs
What type of assistance have you had in the past? (e.g., education consultant; itinerant teacher/strategist; a buddy; a note-taker; a teacher assistant)

_____

_____

Where would you like to sit in class? _____

Which subject areas do you like and which do you dislike?

Like: _____

Dislike: _____

What are your leisure interests and activities?

_____

_____

_____

Are you aware of the kinds of activities available during lunch and recess, such as, clubs, sports, games? Do you know how to get involved in these activities?

_____

_____

_____

How will you let me know when you need help?

Are there any questions you would like to ask or anything you think I should know to help you learn more effectively?

APPENDIX 3

Information for the Substitute Teacher

Date: _____

To my Substitute:
Please be advised that _____ is in my _____ class. _____ is a student with a visual impairment who reads:

- ❒ in braille
- ❒ in large print
- ❒ with audiotapes
- ❒ using magnification devices.

Please remember:
Anything you write on the board will need to be verbalized.

During fire drills, you will need to take care to make sure this student is safe. I have made the following special arrangements to ensure his or her safety:

_____

_____

_____

Other:

_____

_____

_____

Should you have any questions or concerns, speak to _____ here at the school, or contact the education consultant for students with visual impairments, _____ at _____(telephone number).

Sincerely,

APPENDIX 4

MAPS Procedures

The group taking part in this process include a facilitator, a recorder, the student (when appropriate), parents, teachers, friends and those persons working directly with the student.

The group sits in a circle or semi-circle. The facilitator directs the questions and the responses are recorded on chart paper so that all may see. The atmosphere is open and accepting of all responses, similar to brainstorming sessions. Following is a list of the seven questions to be asked. Insert the child's name in the blanks.

1. What is _____'s history? The family representative responds to this question.

2. What is your dream for _____? The family representative responds to this question.

3. What are your fears for _____? The family representative answers this question.

4. Who is _____? This is a brainstorming question for the entire group. This question is asked in order to bring out the child's personality, likes, dislikes, hobbies, etc.

5. What are _____'s strengths? This is another brainstorming session as in question four.

6. What are _____'s needs? This is another brainstorming session.

7. What would an ideal day for _____ look like? What do we need to do to make this real?

Forest, M. & Lusthaus, E. (1990). Everyone belongs: With the MAPS action planning system. *Teaching Exceptional Children, 22(2), 32 – 35*. Original source as cited in*: Creating an Inclusive Classroom: Integrating Students with Special Needs* (pp. 16-17), by Saskatchewan Professional Development Unit (SPDU) and Saskatchewan Instructional Development and Research Unit (SIDRU), (1996), Saskatoon, SK. Adapted/reproduced with permission.

3.3 Departmental Examinations - Special Cases

Rationale
Students with exceptional needs may require special provisions or considerations when writing departmental examinations. The assessment practices should align with the curricular and instructional adaptations and supports that have been provided for the student.

Policy
Special provisions or considerations may be made in writing departmental examinations for students with sensory disabilities, physical disabilities, acute or chronic illness and learning disabilities.

Procedures

- The special provisions that may be made include:
  - extended writing time;
  - use of a separate room for writing;
  - specially printed examination paper (e.g., large print, braille, coloured paper);
  - use of a reader and/or scribe (The writing session must be audio taped for appeal purposes. Interpretation or clarification of terms, questions, or content cannot be provided to the student. The scribe will write the answers verbatim with the student giving direction as to the form of the answer in the case of paragraphs and essays, and the spelling of significant words); and
  - use of a word processor or brailler (Students are not permitted use of program utilities such as spell check, thesaurus, dictionary or grammar check).

- Decisions regarding special provisions or considerations are made by the Office of the Registrar in consultation with the school and Department personnel. Parents or guardians and other involved agencies may also be consulted.

- The principal submits a formal written request for a special provision or consideration for a student taking a departmental examination (see Appendix C in the Registrar's Handbook for School Administrators). The formal written request must include:
  - an explanation of the student's disability with supporting documentation (in the case of learning disabilities, this should include diagnosis and recommendations for accommodations made by a qualified educational psychologist within the last two years);
  - an outline of the current approaches used in written examinations as identified in the student's personal program plan; and
  - a description of the proposed special provision or consideration for the writing of the departmental examination.

- This request must be directed to the Office of the Registrar, Provincial Examinations and Student Services, as early in the session as possible. The Registrar will notify the principal, in writing, of the special provisions or considerations that can be made for the student.

References

Clauses 175(2)(k) and 231(2)(p) of The Education Act, 1995, S.S. 1995, c.E-0.2

Subsections 31(1), (3) and (6) of The Education Regulations, 1986, c.E-0.1 Reg 1

Saskatchewan Education. *Office of the Registrar, Provincial Examinations and Student Services. Registrar's handbook for school administrators 2001-2002*. Regina, SK: Saskatchewan Education.

Saskatchewan Education. (1991). *Student evaluation: A teacher handbook*. Regina, SK: Author.

Saskatchewan Education. (1992). *The adaptive dimension in core curriculum*. Regina, SK: Author.

Saskatchewan Education. (1999). *Student evaluation: A staff development handbook*. Regina, SK: Author.

From *Children's Services Policy Framework: Supporting Student Diversity 2002*, Special Education Unit, Saskatchewan Learning, Regina. Author.

Orientation and Mobility

Overview of Concept Development Skills

Size, shape and function of objects in the world

size:
- ❑ big/little
- ❑ tall/short
- ❑ narrow/wide
- ❑ long/short
- ❑ thin/thick

shape:
- ❑ square, circle, triangle, etc.

function:
- ❑ by daily use (e.g., comb for grooming)

Texture and contour concepts of objects

texture:
- ❑ rough/slippery
- ❑ hard/soft
- ❑ sharp/dull
- ❑ slippery
- ❑ bumpy
- ❑ jagged

contour:
- ❑ flat
- ❑ straight
- ❑ incline/decline
- ❑ curved
- ❑ crooked

Time, distance, temperature, amount and weight concepts

time:
- ❑ now/later
- ❑ morning, afternoon, evening
- ❑ day/night
- ❑ today, tomorrow, yesterday
- ❑ minute, second, hour

distance:
- ❑ close/farther
- ❑ to the driveway
- ❑ one city block
- ❑ across the room/down the hall
- ❑ across the yard, street
- ❑ millimetres, centimetres, metres

temperature:
- ❑ hot/cold
- ❑ cool/warm

amount:
- ❑ all/none
- ❑ more
- ❑ empty/full
- ❑ half/whole

weight:
- ❑ heavy/light

Identification and movement of complex body parts and body planes

parts:
- ❑ tongue
- ❑ neck
- ❑ forearm
- ❑ thumbs
- ❑ hips
- ❑ chin
- ❑ chest
- ❑ wrist
- ❑ waist
- ❑ ankle
- ❑ jaw
- ❑ shoulder
- ❑ fingers
- ❑ thigh
- ❑ heel

planes:
- ❑ top of head
- ❑ front of body
- ❑ sides of body
- ❑ bottom of foot
- ❑ back of body

movement:
- ❑ bends body backwards, forwards, sideways
- ❑ proper posture
- ❑ rises up on toes
- ❑ moves forward/backward

Position of self in relation to objects and to people and objects

- ❑ on/off
- ❑ on top of
- ❑ left/right
- ❑ facing toward
- ❑ on the bottom of
- ❑ in between
- ❑ next to
- ❑ to the side of
- ❑ infront of/behind
- ❑ higher/lower
- ❑ over/under
- ❑ high/low

Specific environmental concepts (indoors and outdoors)

indoor concepts:
- ❑ walls, ceilings, floors
- ❑ carpet, linoleum, rugs
- ❑ curtains

outdoor concepts:
- ❑ sidewalks, streets, driveways, etc.
- ❑ corners, curbs
- ❑ railings, bridges, ramps
- ❑ stairs, escalators, elevators
- ❑ asphalt, dirt, grass, etc.
- ❑ signs, symbols, street names
- ❑ weather

means of transport:
- ❑ cars, buses, air planes, boats
- ❑ riding toys, bikes, sleds, skis, roller blades

auditory identification:
- ❑ identify sounds
- ❑ interpret sounds
- ❑ categorize sounds
- ❑ discriminate sounds
- ❑ localize sounds

olfactory identification:
- ❑ identify smells
- ❑ interpret smells
- ❑ localize smells
- ❑ categorize smells
- ❑ discriminate smells

Feelings/Sensations/Emotions

- ❑ happy/sad

Gestures and body language

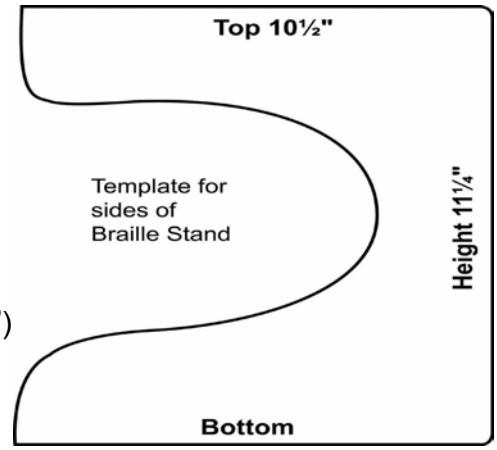
- ❑ waving
- ❑ nodding
- ❑ eye contact
- ❑ shrugging
- ❑ frowning/smiling

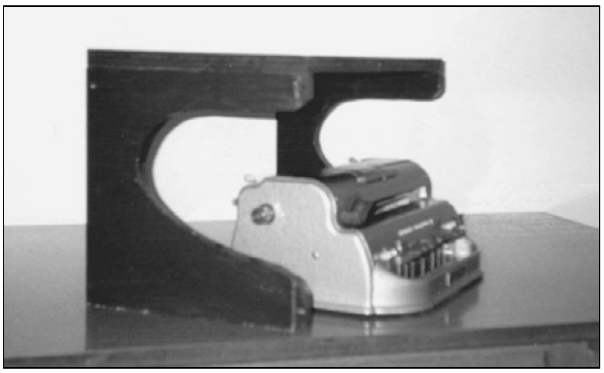
From *Resources for family centered intervention for infants, toddlers, and preschoolers who are Visually Impaired:* VIISA Project (pp 828 – 829), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. SKI-HI Institute Department of Communicative Disorders, Utah State University. Reprinted with permission.

Adapted Working Surfaces

BRAILLE STAND

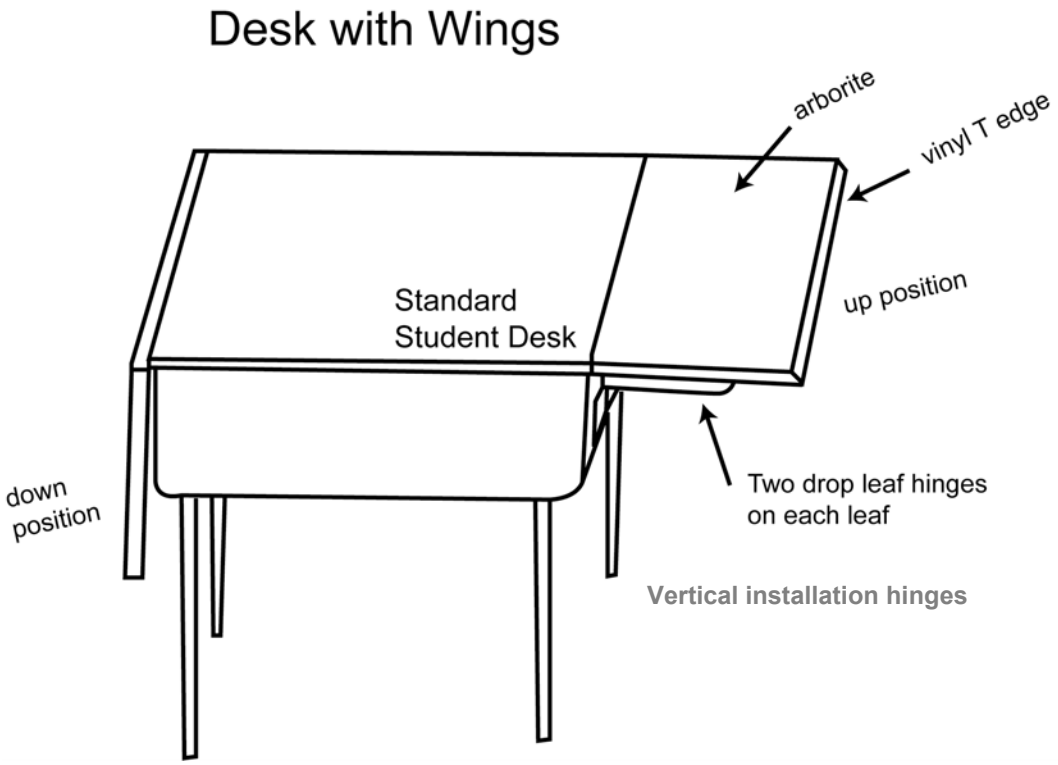
Made of ¾" plywood
Table top dimensions are 20 ½" X 10 ½"
Pieces: 2 sides (see template)
1 table top
1 brace (from side to side on underside of table top at the back of the braille stand 19" X 2")





Adapted Working Surfaces

Some alternate working surfaces for a student with a visual impairment are a double desk, a typing table, a desk with a tilted surface, or wings on a desk.



Storage Unit for Braille Books (upright) and Equipment

APPENDIX 8

Functional Vision Screening Assessment

Name: _____Birthdate: _____ Age: _____

Grade: _____ School: _____ Date: _____

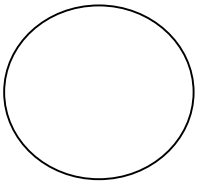
1. Pupillary reaction

2. Blinks at shadow of hand

3. Orients peripherally

   Right
   Left

Peripheral Field



4. Fixates on 4” object

   At 12 to 18 inches
   At 10 feet

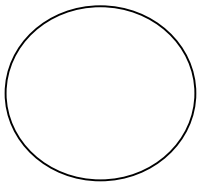
5. Shifts gaze

6. Reaches on visual cue

7. Tracks horizontally

   Light
   Object

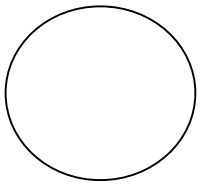
Horizontal Field



8. Tracks vertically

   Light
   Object

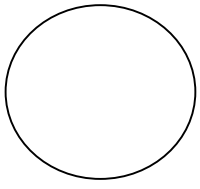
Vertical Field



9. Tracks circularly

   Light
   Object

Circular Field



10. Converges

11. Picks up (3 objects less than 1” in size)

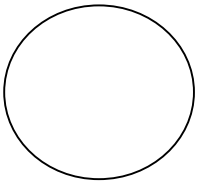
    a. _____

    b. _____

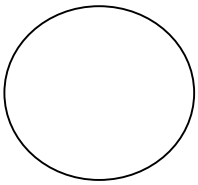
    c. _____

12. Eye preference
    If preference, circle one: Right or Left

13. Visual Field Preference Visual Field



14. Central Fields Central Field



15. Scanning Ability

16. Different Visual Behaviours

APPENDIX 9

Braille Reading Technique

Position

The surface of the reading material should be flat and at elbow level. The reader should maintain an erect, comfortable reading position. Both hands are used in a coordinated way in touch reading and should rest together on the reading surface. All fingers should be gently curved so that the pads rest on the line of braille. The hands should be nearly parallel. Wrists should be relaxed.

The surface employed for the perception of braille is an oval area on the pads of the fingers. Most readers utilize two index fingers, with some adding the two middle fingers.

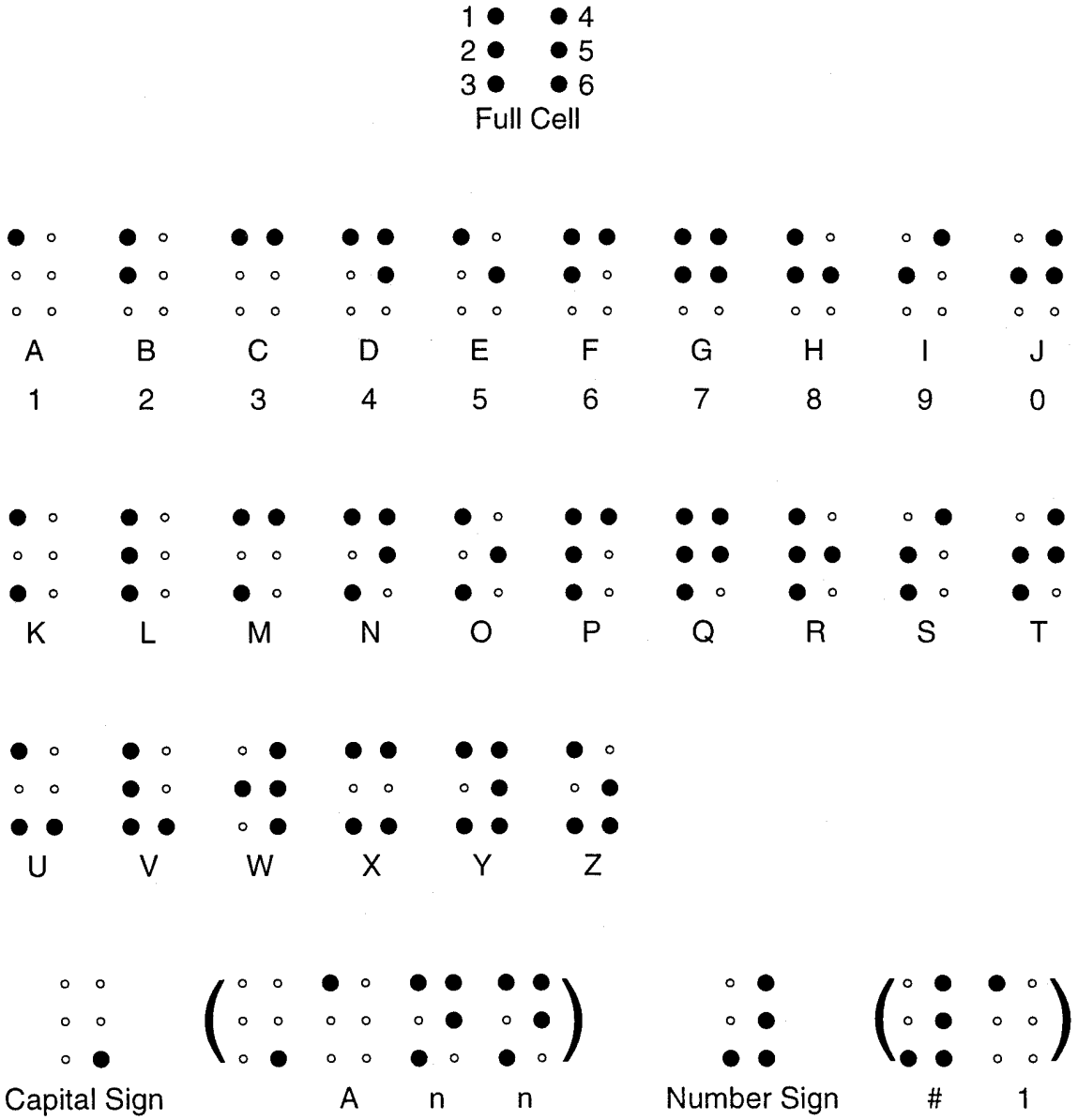
Hand Movements

The fingers move across the characters in a smooth left to right sweep across the page. Both hands share in the touch reading process. The beginner keeps both hands together with the index fingers touching the line. As the reader gains experience he often uses his hands more independently. While he is completing one line with his right hand, the left moves in a diagonal pattern to the beginning of the next line, to read the first part of the succeeding line.

Very light pressure should be maintained at all times.

APPENDIX 10

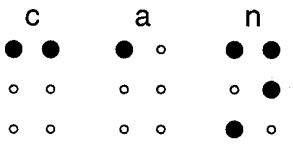
Braille Alphabet and Numbers



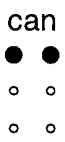
From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired:* VIISA Project (p. 1125), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Grade 1 and Grade 2 Braille

Grade 1:

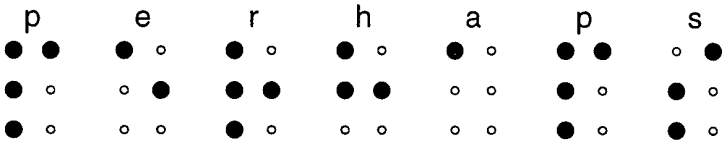


Grade 2:

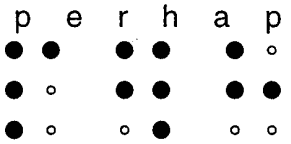


In Grade 2 braille <u>can</u> is simply brailled "c" as a whole word sign for <u>can</u>.

Grade 1:



Grade 2:



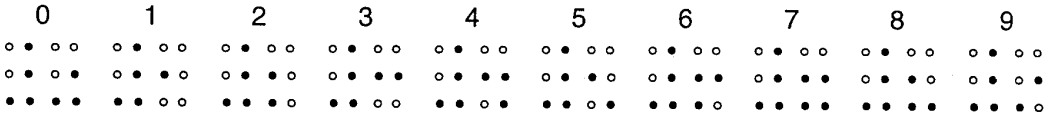
<u>p</u> is brailled
<u>er</u> sign is brailled
<u>h</u> is brailled
} This combined stands for the word "perhaps"

Grade 1 Braille — also known as alphabet braille.
Grade 2 Braille — also known as contracted braille

From *Resources for family centered intervention for infants, toddlers, and preschoolers who are visually impaired:* VIISA Project (P. 1125), edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Nemeth Braille Code

1 • • 4
2 • • 5
3 • • 6
Full Cell



Signs of Operation:

Plus: 

Multiply: 

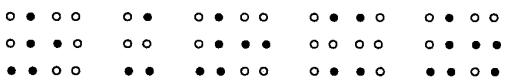
Minus: 

Divide: 

Equal: 

Example:

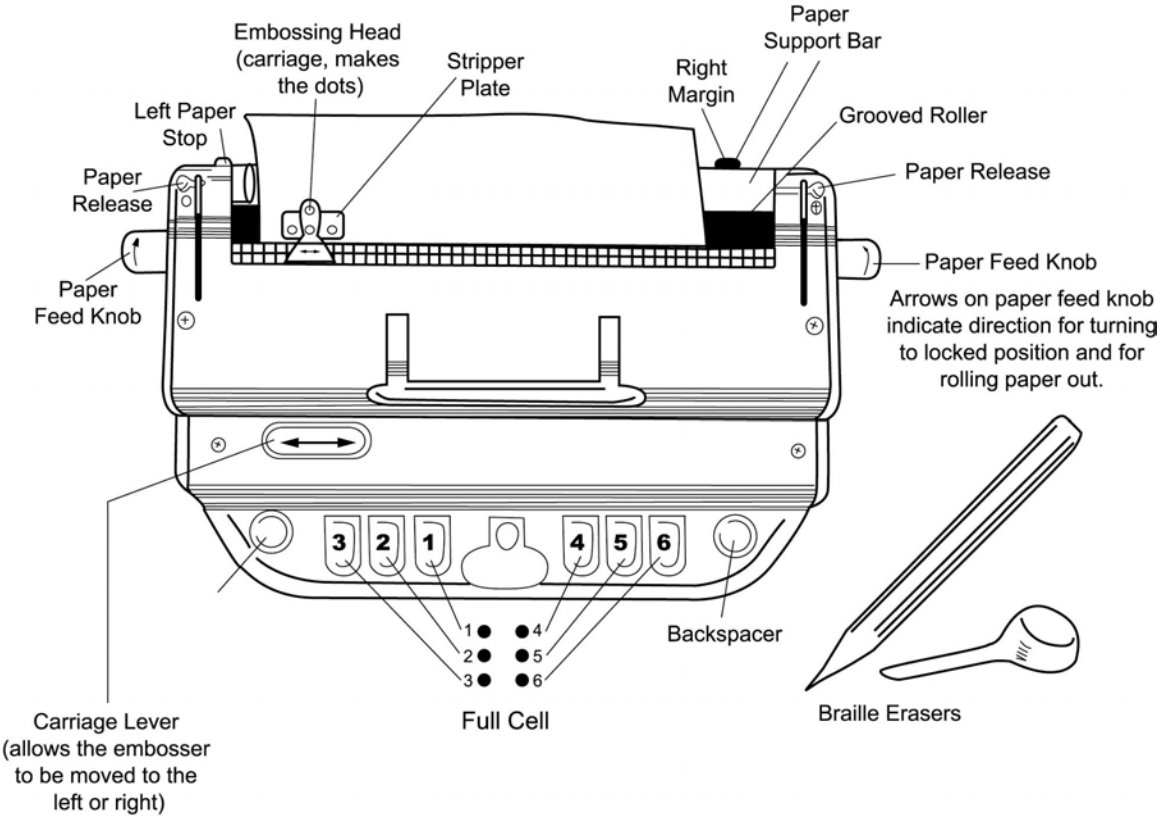
1 + 3 = 4



From Special Education Branch, Alberta Education, *Teaching Students with Visual Impairments* (Edmonton, AB: Alberta Education, 1996), page VI.44. Adapted/reproduced with permission.

APPENDIX 11

Braille and the Perkins Braillewriter



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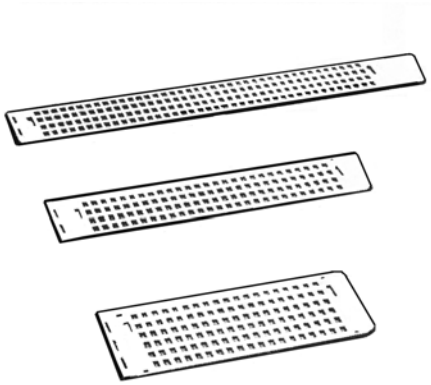
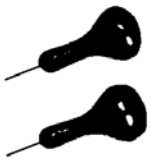
Slate and Stylus

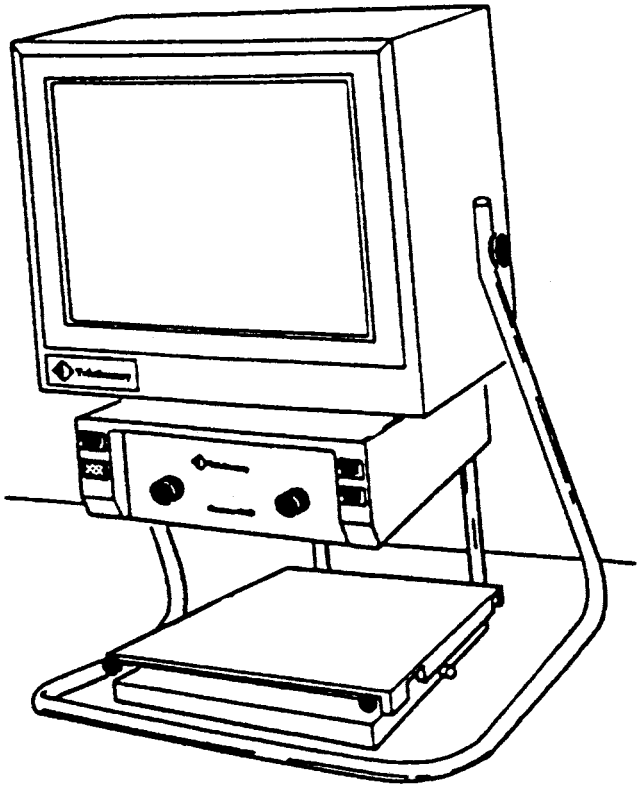
Pocket Slate



Pencil Sylus



Closed Circuit TV System



Spectrum

Description:

Low vision students are able to access text and graphic printed material that is projected into large print onto a 20 inch colour television screen. Features include variable magnification, moveable view table, a line marker to assist in reading one line of print and a polarity switch that allows the student to display dark letters on a light background or light letters on a dark background.

Standard Circulation:

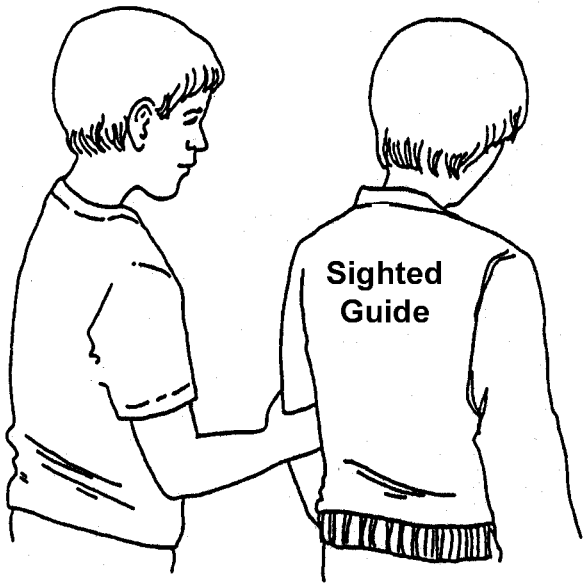
Print manual, video cable and power cable.

Wording taken from *Materials Resource Centre for the Visually Impaired equipment catalogue*, Alberta Learning, 2002, Edmonton, AB: Materials Resource Centre for the Visually Impaired. Reprinted with permission. Diagram courtesy of Telesensory Systems Ltd., Mountain View, CA. Reprinted with permission.

APPENDIX 13

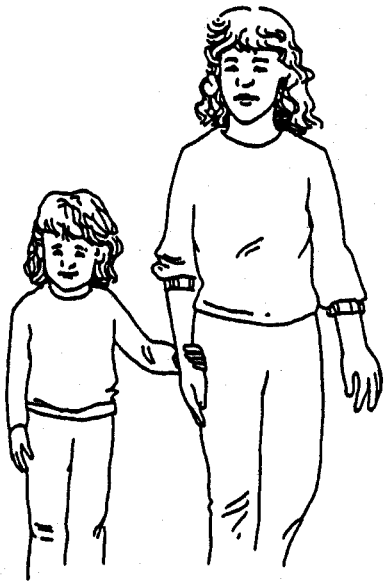
Sighted Guide Techniques

A. For Older Child



The child who is blind should lightly grasp the guide just above the elbow as this position gives the best movement clues. The thumb is on the outside as in holding a glass. The child's arm needs to be held at a right angle. The child is ½ step behind the guide.

B. For Younger Child



In the sighted guide technique, the child may hold onto the guide's wrist and follow the guide's body movement. The child is guided, not pushed or pulled when walking along.

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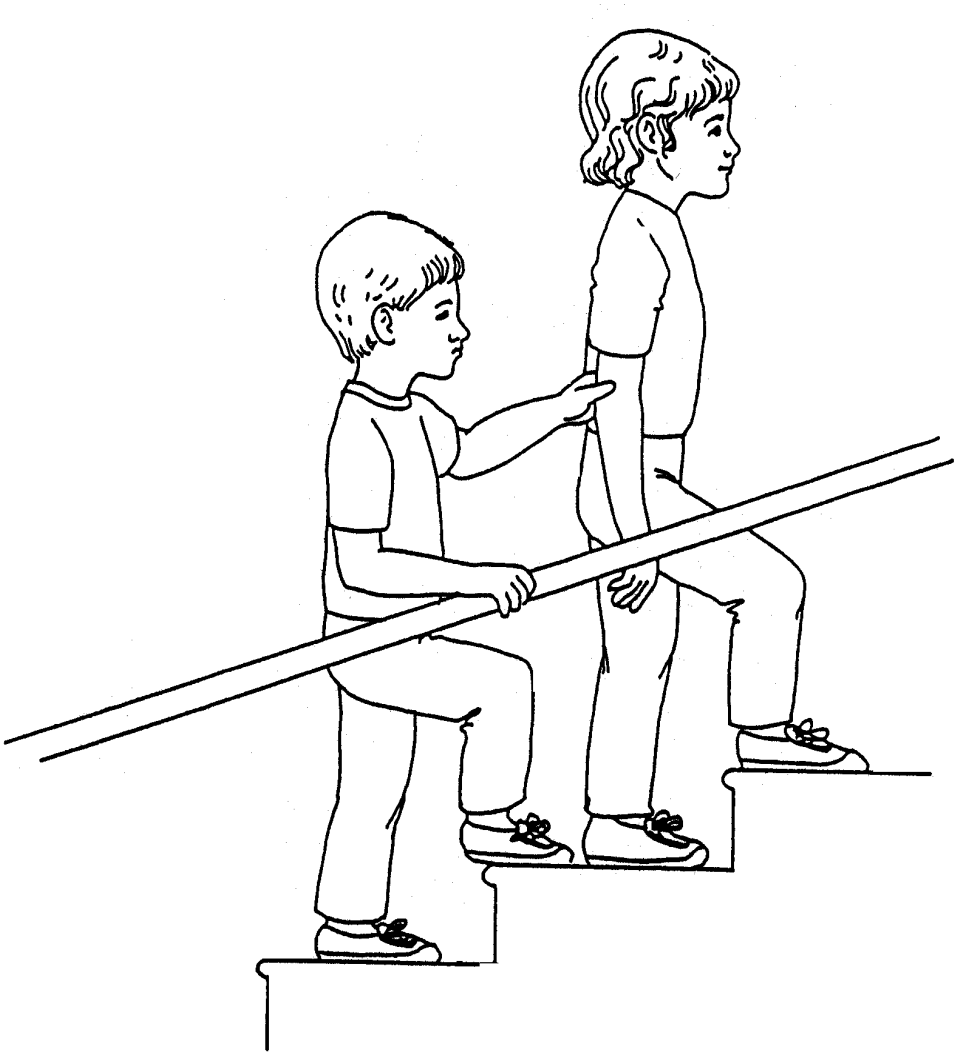
Sighted Guide on Stairs



The guide stands toward the middle of the stairs and the child who is blind will be one step behind aligned with the guide's right shoulder and holding onto railing on his right side. The opposite would apply if the railing is on the left side.

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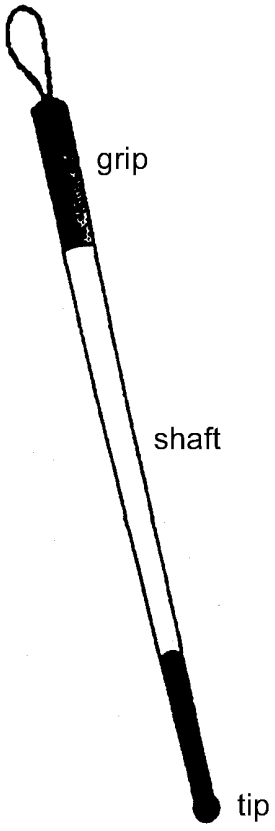
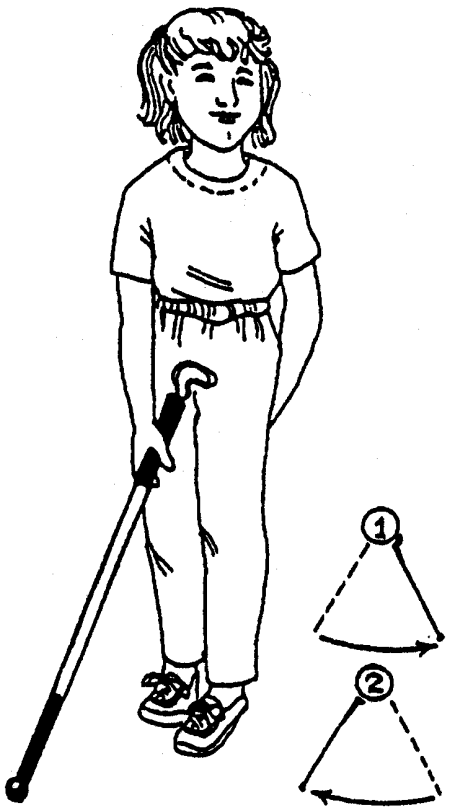
Using the Long White Cane

A. Parts



B. Techniques



Constant Contact

Cane tip is kept in contact with the floor as she walks. Thus, with the next step it would be slid to her left side.

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Protective Techniques

Upper Hand & Forearm (cross-body technique)

A.

This technique is used for protection to the upper body. The arm is at shoulder level with the elbow bent. The elbow protects one shoulder while the fingers protect the other.

Lower Hand & Forearm (lower cross-body or dropped hand)

B.

Here the cross-body or upper hand and forearm technique is combined with the lower cross body or dropped hand technique for further protection.

Adapted "Bumper Cars, High"

C.

One hand on top of the other with palms facing away from child, held straight in front of body at shoulder level.

Adapted "Bumper Cars, Low"

D.

One hand on top of the other with palms facing away from child, held straight in front of body at waist level.

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Safely Locating a Dropped Object

Never bend over when picking up a dropped object. Here the child's head will bump the edge of the desk as she bends over.

This is the correct manner for picking up an object. The girl's hand will provide protection as she squats straight downward to reach for the object.

From *Resources for family centred intervention for infants, toddlers, and pre-schoolers who are visually impaired.* VIISA Project (p. 797). Edited by Elizabeth Morgan, 1995, Logan, UT: Hope Inc. Reprinted with permission.

Saskatchewan Learning Resource Centre

The Resource Centre loans:

- braille, audiotape and large print resources including school and leisure reading titles;
- kits, tactile games and maps. Schools that will require the use of kits for an extended period for a student are encouraged to purchase them;
- professional resources for educators working with students who are visually impaired; and
- the Resource Centre has a few braillers and 4-track tape players; in most cases the equipment is purchased by the school with the technical aids grant and follows the student through his/her school career. Contact the Special Education Unit (306) 787-1183 for additional information.

Searching for materials:

- You can request a print catalogue by calling (306) 787-5998.
- You can search online through the Resource Centre's web catalogue http://www.sasked.gov.sk.ca/resources/lib4_hom.html. You will find instructions for searching specifically for alternate format materials.

How to order materials:

- Schools can fax or mail requests on the order forms found in the Alternate Format catalogue.
- Schools can call (306) 787-5998 to request titles or email ResCent2@sasked.gov.sk.ca.
- Schools can make requests through the Resource Centre's web catalogue http://www.sasked.gov.sk.ca/resources/lib4_hom.html.
- If you are ordering a title that is not in the catalogue, please forward a completed request form. Send one copy of the book intended for large printing. The book will be cut up during printing and will not be returned. If we are not able to borrow braille or audiotape resources from another library, we will contact you for two copies of the book for braille or audiotape. The print copies will be returned.
- The Resource Centre accepts requests throughout the year. However, it is important to note that the turnaround time for large printing a book is about 2 weeks. Purchased materials can take 8 weeks to arrive and books that need to be brailled will require 3-10 months to complete. For books requiring brailling, the braillist needs to know what order the chapters will be taught.
- If you put your email address on the request form, the Resource Centre can let you know if material will be delayed, without disturbing you in class.

Due dates:

- Student books and kits are loaned for the entire year. Items can be renewed. Return or renew all materials in June. We need to know if the materials will be available for another student.
- Professional materials may be loaned for as long as required. If there is another request for a title, the Resource Centre will recall it.
- Please return any materials not in use. We appreciate getting leisure reading books back as soon as the student is done with them. We frequently have other requests for them.

Returning materials:

- Braille and audiocassettes can be mailed free of charge with the designation "Blindpost."
- Schools are required to pay postage for all other materials being returned to the Resource Centre.
- Kits are sent in a box, please return them in a box. This ensures that the Resource Centre staff will know that the copy you had came back.
- Please let us know if any parts of the kit are missing; we can use the summer to reorder the parts.
- If you are borrowing materials from the CNIB library please keep track of which titles they are and return those items directly to them. You may also have received books from the CNIB and other libraries from us, on interlibrary loan. These need to be sent back to the Resource Centre.

ACCESS 2003-2004 SPECIAL EDUCATION UNIT
Individual Consultation Request

Please indicate which area this referral applies to:

Autism	_____	Challenging Behaviour	_____
Deaf and Hard of Hearing	_____	Visual Disability	_____
Intellectual and/or Multiple Disability	_____	Fetal Alcohol Spectrum Disorder	_____

Date_____Student Name _____

Date of Birth _____Age _____Grade _____

Parents/Guardians _____

Address_____Phone_____

School Name _____Phone_____

Address_____Postal Code_____

School Fax _____School Email_____

Principal _____Teacher(s) _____

Other Members of the School-based Team_____

_____

Description of Need for One-on-One Consultation

_____

_____

_____

(please attach assessment reports, current PPP's and other pertinent data to this referral form)

School Division_____

Address_____Postal Code_____

Has this student been seen previously by an ACCESS Consultant? No_____Yes_____

Date of consultation(s)_____ Consultant _____

When the ACCESS Team member is arranging the consultation, he/she should contact:

Name of Contact/Referring Person _____

Phone _____School Division Approval _____
(signature)

Please send the completed referral form to:
Senior Program Manager
Special Education Unit, Saskatchewan Learning
2220 College Avenue, Regina SK S4P 3V7
Phone: (306) 787-1183 FAX 787-0277 Email: Penny.Ursu@sasked.gov.sk.ca
Web site: http://www/sasked.gov.sk.ca.curr_inst/speced

☞Please forward a copy to: Director of Education/Designate, your Superintendent/Coordinator of Special Education Services and the Saskatchewan Learning Regional Superintendent of Children's Services☜

Section XI – Glossary

Please note that definitions of common eye conditions are found on pages 4-5.

Acuity: The sharpness of vision; usually refers to central vision.

Adventitious: Accidental or acquired; not hereditary.

Age-appropriate: Consistent with the concept of normalization. This refers to the use of materials and activities with individuals who have developmental delays that reflect their chronological age rather than their developmental age.

Aligning: Lining up the right or left side of the body against an object or surface to assist in establishing a line of travel.

Amblyopia: Low or reduced visual acuity without an apparent disease of the eye.

Aniridia: Complete or partial absence of the iris, usually hereditary.

Anophthalmos: Absence of the eye caused by a developmental defect.

Aphakia: Absence of the lens of the eye.

Arc: The pattern of a cane tip when using the touch technique.

Auditory Sense: Related to or experienced through the process of hearing.

Binocular Vision: The ability to use the two eyes simultaneously to focus on the same object and to fuse the two images into a single image. This gives a correct interpretation of the object's solidity and position in the space.

Blind Mannerisms: Repetitive, stereotypical movements and mannerisms, such as eye-poking and rocking which are characteristics of many blind individuals.

Blindness: Legal blindness ranges from a visual acuity of 6/60 (20/200) in the better eye after correction to having no usable vision, or a field of vision reduced to an angle of 20 degrees.

Body Awareness: A conscious appreciation of the relationship of all body segments to each other and to objects. A mental picture of the physical parts of the person and their relationships to each other.

Body Image: Picture of one's own physical body and its capacity for movement and function.

Buphthalmos (Hydrophthalmos): Enlargement of the eyeball (usually due to glaucoma).

Clearing: The process of checking to see if an area is free of objects. This can be done by sweeping a cane on the floor or ground, or by sweeping a hand on a surface, such as the seat of a chair.

Clue: Any sound, odour, temperature, tactile or visual stimulus that affects the senses and can readily be used in determining one's position in space or to help establish a line of direction.

Coloboma: Congenital cleft due to failure of the eye to complete growth in the part affected, such as a gap in the formation of the iris.

Colour Blindness (Colour Deficiency): Diminished ability of the visual system to perceive differences in colour, especially in red and green.

Compensatory Skills: Techniques, habits or activities that must be developed to overcome severe visual impairment. Includes daily living skills, social skills or emotional skills.

Concrete Objects: Actual physical objects which can be experienced tactually and visually as known things.

Cones: Light-receiving retinal nerve cells concentrated primarily in the central retina of the eye, concerned with colour discrimination and detail vision in high levels of illumination.

Congenital: Existing before birth or at birth; dating from birth.

Contrast: The relative difference between lightness and darkness of things observed.

Depth Perception: The ability to perceive the relative distance of objects and their spatial relationship to each other.

Developmentally Delayed: Functioning at a developmental level below one's chronological age.

Diabetic Retinopathy: Diabetes causes haemorrhaging of blood vessels in the retina causing decreased visual acuity and fluctuating vision; progressive, gradual loss of vision; secondary conditions of glaucoma; retinal detachments; cataracts and eye palsies.

Diopter: A unit of measurement of the refractive power of a lens or an optical system.

Diplopia: The seeing of one object as two; double vision.

Direction Taking: Using an object or sound to assist in travelling a straight line.

Directionality: The ability to physically move your body when given various positional terms: right, left, forward, backward.

Distance Vision: Refers to the visual acuity attained at six meters (20 feet).

Down Syndrome: A congenital condition due to a genetic abnormality (extra 21 chromosome). Ocularly, individuals with Down syndrome may demonstrate an obvious squint and nystagmus. Many are highly myopic (near-sighted) and almost half of this population have congenital cataracts.

Drop-off: Any sharp decline in the environment such as a down curb or stairs.

Eccentric Viewing: Tilting of the head to gain the best image.

Enucleation: Complete surgical removal of the eyeball.

Esotropia: An involuntary turning inward of one eye (convergent strabismus or crossed eye).

Exotrophia: Abnormal turning outward from the nose of one or both eyes (divergent strabismus).

Eye Dominance: Tendency of one eye to assume the major function of seeing, being assisted by the less dominant eye.

Familiarization: The process of learning the placement, arrangement and relationship of objects within an area.

Field of Vision: The area or extent of physical space visible to an eye held in a fixed position.

Fixation: The process, condition or act of directing the eye toward the object of regard, causing, in a normal eye, the image of the object to be centred on the fovea.

Focus: The point where light rays converge after passing through a lens.

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

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

Gait: The style or rate of walking.

Glare: A quality of relatively bright light which discomfort in the eye or which interferes with visibility and visual performance.

Guideline: Also called “shoreline”. A line in the environment where two surfaces meet (sidewalk and grass).

Hemianopsia: Blindness of one-half of the visual field of one or both eyes.

Homebase: A familiar location and starting to learn the relationships of other objects in a given area (the front door of a classroom).

Hypotropia: Strabismus characterized by the downward turn of the eye.

Illumination: Providing physical light to an area.

Intraocular: Within or inside the eye.

Iris: Coloured circular membrane suspended behind the cornea and in front of the lens of the eye.

Iritis: Inflammation of the iris.

Keratoconus: Cone-shaped deformity of the cornea.

Kinesthetic Sense: Ability of the brain to perceive the location or relationship of parts of the body as they are moving, without checking their location with any other sense.

Landmark: Any sensory information, such as a familiar object, sound, odour, temperature, or tactile clue, useful to an individual to assist him/her during independent travel.

Large Print or Type: Print that is larger than type commonly found in magazines, newspapers and books.

Laterality: The internal process whereby the individual has complete motor awareness of both sides of the body.

Lens: The part of the eye located immediately behind the pupil; its function is to focus light rays on the retina.

Light Perception (LP): The ability to distinguish light from dark.

Line of Direction: The course along which a person is aimed to move.

Long White Cane: A cane which is designed for travel purposes for an individual who is blind/visually impaired. Its purpose is to detect obstacles and surface changes in the travel environment of its user.

Low Vision (Partial Sight): Reduced central acuity or visual field loss which, even with the best optical correction provided by regular lenses, still results in visual impairment from a performance standpoint.

Low Vision Aids: Optical or non-optical devices useful to persons with low vision.

Low Vision Assessment: Comprehensive assessment of a visually impaired person's visual impairment, visual potentials and capabilities.

Macrophthalmos: Abnormally large eyeball, resulting chiefly from infantile glaucoma.

Macula: The small area of the central retina that is the area with the greatest visual acuity.

Magnifiers (Hand, Stand, Illuminated): Convex lenses that can increase the size of a retinal image or can bring the image into clearer focus.

Metronome: An instrument designed to mark exact time by a regularly repeated tick.

Microphthalmos: Abnormally small eyeball present at birth.

Mobility: The ability to move from one location to another in a safe and efficient manner. Term used to denote the ability to navigate from one's present fixed position to one's desired position in another part of the environment (see Orientation).

Mobility Device: Equipment used in the same manner as a long white cane. Its function is to act as a device and detection tool of obstacles and ground surface changes to the person using it.

Monocular: Pertaining to or affecting one eye. Pertaining to any optical instrument which is used with only one eye.

Multihandicapped: Term used to classify individuals with two or more disabilities present.

Muscle Balance: Ability of the eye muscles of each eye to pull together to allow binocular vision to occur in all directions.

Near Vision: The ability to distinctly perceive objects at normal reading distance, about 36-40 cm (14-16 inches) from the eyes.

Nemeth Code: A mathematical and scientific notation code in braille.

Null Point: The point at which nystagmoid movements slow or stop. The individual will often tilt one's head to create this state.

Object Perception: The ability to use sound and the absence of sound to locate and avoid objects in a travel pathway.

Occipital Lobe: About 80% of messages from the eye go to the occipital lobe in the back of the brain where most of the seeing takes place and images are formed. The other 20% of messages go to the part that controls the eye muscles for eye movement, etc.

Occluder: A patch placed over the eye to obscure or block vision.

O.D. (Oculus Dexter): The right eye.

Olfactory Sense: Relating to or experienced through the sense of smell.

Ophthalmologist: A physician, an MD, who specializes in diagnosis and treatment of defects and diseases of the eye, performing surgery when necessary or prescribing other types of treatment, including glasses.

Optic Atrophy: Degeneration of the optic nerve which carries messages from the retina to the brain.

Optic Nerve: The rods and cones are light receptors sending information to the brain via millions of tiny nerve fibres that come together in the back of the eye to form one big bundle called the optic nerve.

Optician: A professional that grinds and fits lenses prescribed by an opthalmologist or optometrist.

Optometrist: A doctor of optometry, an OD is a health care professional who specializes in the examination, diagnosis and treatment of conditions or impairments of the visual system.

Orientation: The ability to use sensory information to know one's location in the environment and to know one's relationship to objects in the environment. Process by which a person who is blind or visually impaired uses the remaining senses to establish his or her position and relationship to all other significant objects in the environment (see Mobility).

O.S. (Oculus Sinister): The left eye.

O.U. (Oculus Uterque): Both eyes.

Partial Sight: For educational purposes, a partially seeing student is one who has visual acuity of 6/21 (20/70) or less in the better eye after correction and who can use vision as the chief channel of learning.

Peripheral Vision: Ability to perceive presence, motion or colour of an object outside of the direct line of vision.

Photophobia: Abnormal sensitivity to and discomfort from light.

Point of Reference: A determined fixed point within an environment which is used to create a relation or connection with other points in the same environment.

Pre-cane Skills: Concept development and travel skills usually taught prior to cane techniques.

Protective Technique: The use of specific hand and forearm positions as a means of self-protection as one navigates forward into space. These techniques are employed to detect objects that are located at face or body level.

Ptosis: Drooping of the upper eyelid below its normal position.

Pupil: The round hole in the centre of the iris; its purpose is to regulate the amount of light entering the eye.

Reading Stand: Device that supports regular or large print books.

Residual Vision: Any usable, remaining vision.

Retina: The thin membrane that covers the entire inside surface of the eye.

Rods: Light-receiving retinal nerve cells concentrated in the peripheral retina; sensitive to movement and light in low levels of illumination.

Saccadic Movement: A quick, abrupt movement of the eye, as obtained in changing fixation from one point to another.

Scotoma: A blind or partially blind area in the visual field.

Search Pattern: A method of recovering a dropped object.

Sensory Training: Learning to use the senses (hearing, touch, smell and sight) to one's maximum potential.

Shorelining: Following a guideline in the environment, usually by using a cane (see Guideline).

Sighted Guide: The use of a sighted person as a travel partner; the individual who is visually impaired actively makes contact with the sighted guide by holding his/her upper arm and moves in tandem with the guide.

Slate and Stylus: Portable braille writing tools used for note taking.

Snellen Chart: Used for testing central visual acuity. It consists of lines of letters, numbers or symbols in graded sizes. Each size is labelled with the distance at which it can be read with the normal eye. Most often used for testing vision at six meters (20 feet).

Sound Differentiation: The ability to distinguish between different and useful sounds.

Sound Localization: The ability to determine the exact bearing, line or direction of the source of a sound.

Spatial Relationship: The ability of an observer to perceive the position of two or more objects in relation to self and others.

Squaring Off: Lining up the back of the body against an object or surface to assist in establishing a line of travel.

Stereopsis: Visual perception of depth or three-dimensional space.

Stereoscopic Vision: Ability to perceive relative position of objects in space without such cues as shadow, size and overlapping.

Tactile: Pertaining to the sense of touch.

Total Blindness: Complete inability to see.

Trailing: The act of using the hand to follow a surface for any or all of the following reasons; to determine one's position in space, to locate a specific object or place, to obtain a parallel line of travel.

Tunnel Vision: Contraction of the visual field to such an extent that only a small area of central visual acuity remains, giving the affected individual the impression of looking through a tunnel.

Typoscope: A black card in which a window has been cut, which is the length and width of two or three lines of

print. When placed on the page, it helps the student focus.

Veering: Drifting away from the desired line of travel.

Visual Acuity: Acuteness or clearness of vision which is dependent on the sharpness of the retinal focus, the sensitivity of the optic nerve and the interpretative faculty of the brain.

Visual Attention: Sustained looking at visual objects or pictures.

Visual Awareness: Knowledge that something visible is present in the visual field.

Visual Cortex: The area of the brain where visual information is received and interpreted for seeing.

Visual Cues: Any type of visual information which may be used by an individual to orient self in space, move from one place to another, perform any task or function, or locate a desired place or object.

Visual Efficiency: The degree to which specific visual tasks can be performed with ease, comfort and minimum time – contingent upon personal and environmental variables.

Visual Exploration: Careful inspection of visible things or the surrounding environment.

Visual Field: The area of physical space visible when the body, head and eyes are in a stationary position.

Visual Functioning: A person's use of vision to perform tasks which require visual orientation. Visual functioning seems to be related to previous experiences, needs and expectations of self or others, and general motivation.

Visual Impairment: Any optically or medically diagnosable condition in the eye(s) or visual system that affects the development and normal use of vision. Impairments may be of a minor nature, may be correctable, or may be severe and uncorrectable.

Visual Motor: The control and manipulation of body movements in relation to what is observed.

Visual Perception: The learned ability to construct a visual image, and to be able to distinguish characteristics and to give meaning to what one sees.

Visual Stimulation: Presentation of visual objects and materials in a consistent and orderly sequence so as to permit and foster visual perceptual development.

Section XII – Teaching Resources

These resources are available from: Saskatchewan Learning Resource Centre
1945 Hamilton Street, Regina SK S4P 3V7 Phone: (306)787-5998 Fax: (306)787-3164

Canadian Council of the Blind. (1996). *Active living through physical education: maximizing opportunities for students who are visually impaired*. Ottawa, ON: Canadian Council of the Blind

Cook, G. M. (1989). *The Cook tactile stimulation kit* [kit]. Dawson Creek, BC: Inegra

Erin, J. N. & Wolffe, K. E. (1999). *Transition issues related to students with visual disabilities*. Austin, TX: PRO-ED, Inc.

Frere, S. (1987). *Light box activity guide (levels I, II, III)*. Louisville, KY: American Printing House for the Blind

Frere, S. (1987-90). *Light box materials* [kit]: (levels I-III). Louisville, KY: American Printing House for the Blind

Hagood, L. (1997). *Communication: a guide for teaching students with visual and multiple impairments*. Austin, TX: Texas School for the Blind and Visually Impaired

Harrell, L. (1987). *Preschool vision stimulation: it's more than a flashlight!: developmental perspectives for visually and multi-handicapped infants and preschoolers*. New York, NY: American Foundation for the Blind

Harrison, F. (1993). *Living and learning with blind children: a guide for parents and teachers of visually impaired children.* Toronto, ON: University of Toronto Press

Henry, E. & Clavell, D. (1968). *Listen and think* [kit] (Auditory readiness level, Level B, Level C). Louisville, KY: American Printing House for the Blind

Hill, E. W. & Ponder, P. (1976). *Orientation and mobility techniques: a guide for the practitioner.* New York, NY: American Foundation for the Blind

Hill, E. W. (1981). *Hill performance test of selected positional concepts*. Chicago, IL: Stoelting

Holbrook, M. C. (1996). *Children with visual impairments: a parents' guide.* Bethesda, MD: Woodbine House

Holbrook, M. C. & Koening, A. J. (2000). *Foundations of education* (2nd ed.). New York, NY: American Foundation for the Blind

Human reproduction models. (1990). Cambridge, MA: Jim Jackson & Co.

Jacobson, W. H. (1993). *Art and science of teaching orientation and mobility to persons with visual impairments*. New York, NY: American Foundation for the Blind

Levack, N., Stone, G. & Bishop, V. E. (1994). *Low vision: a resource guide with adaptation for students with visual impairments.* Austin, TX: Texas School for the Blind and Visually Impaired

Levack, N. (1996). *Basic skills for community living: a curriculum for students with visual impairments and multiple disabilities*. Austin, TX: Texas School for the Blind and Visually Impaired

Lieberman, L. J. & Cowart, J. F. (1996). *Games for people with sensory impairments: strategies for including individuals of all ages*. Locust Hill, ON: Human Kinetics

Livingston, R. (1997). *Use of the Cranmer abacus*. Austin, TX: Texas School for the Blind and Visually Impaired

Loumiet, R. & Levack, N. (1993). *Independent living: a curriculum with adaptations for students with visual impairments.* Austin, TX: Texas School for the Blind and Visually Impaired

MacCuspie, P. A. (1996). *Promoting acceptance of children with disabilities: from tolerance to inclusion.* Halifax, NS: Atlantic Provinces Special Education Authority

Michigan School for the Blind. (1965). *Pre-cane mobility and orientation techniques for the blind: curriculum guide.* Lansing, MI: Michigan School for the Blind

Miller, C. & Levack, N. (1997). *A paraprofessional's handbook for working with students who are visually Impaired.* Austin, TX: Texas School for the Blind and Visually Impaired

Moore, S. B. (1992). *Hands on: functional activities for visually impaired preschoolers*. Louisville, KY: American Printing House for the Blind

Pogrund, R. L. (1995). *Teaching age-appropriate purposeful skills: an orientation and mobility curriculum for students with visual impairments (TAPS).* Austin, TX: Texas School for the Blind and Visually Impaired

Saskatchewan Education. (1989). *Meeting challenging needs: a handbook for teachers of students having intensive educational needs.* Regina, SK: Author

Sewell, D. & Johns, J. L. (1996). *Assessment kit: kit of informal tools for academic students with visual impairments*. Austin, TX: Texas School for the Blind and Visually Impaired

Smith, M. & Levack, N. (1996). *Teaching students with visual and multiple impairments: a resource guide*. Austin, TX: Texas School for the Blind and Visually Impaired

Swallow, Rose-Marie, Huebner, K. M. (1987). *How to thrive, not just survive: a guide to developing independent life skills for blind and visually impaired children and youths*. New York, NY: American Foundation for the Blind

Swing cell. (1981). Louisville, KY: American Printing House for the Blind.

Virginia E. Bishop. (1996). *Teaching visually impaired children*. (2nd ed.) Springfield IL: Charles C. Thomas Publishing

Wolffe, K. E. (1999). *Skills for success: a career education handbook for children and adolescents with visual impairments*. New York, NY: American Foundation for the Blind

Wormsley, D. P. (1997). *Instructional strategies for braille literacy*. New York, NY: American Foundation for the Blind

Section XII – Resources for Teaching Braille

American Association of Workers for the Blind. (1972). *The Nemeth Braille code for mathematics and science notation*. Louisville, KY: American Printing House for the Blind

Ashcroft, S. C. (1991). *New programmed instruction in braille*. Nashville, TN: SCALARS Publishing

Bogart, D. (1991). *Mastering literary braille: a comprehensive course*. Toronto, ON: CNIB

Braille code recognition materials: a teacher in-service training program kit. Louisville, KY: American Printing House for the Blind [n.d.]

Castellano, C. (1997). *The bridge to braille: reading and school success for the young blind child*. Baltimore, MD: National Organization of Parents of Blind Children

Caton, H. R. (1987-8). *Patterns pre-braille program*. Louisville, KY: American Printing House for the Blind

Caton, H. R. (1981). *Patterns patterns patterns: the primary braille program*. Louisville, KY: American Printing House for the Blind

Caton, H. R., Pester, E. & Bradley, E. J. (1990). *Read again: a braille program for adventitiously blinded print readers*. Louisville, KY: American Printing House for the Blind

Caton, H. R. (1997). *The braille connection: a braille reading and writing program for former print users*. Louisville, KY: American Printing House for the Blind

Caton, H. R., Pester, E & Hurko, E. *Tactual discrimination worksheets*, Louisville, KY: American Printing House for the Blind [n.d.]

Craig, R. R. (1987). *Learning the Nemeth Braille code: a manual for teachers and stu*dents. Louisville, KY: American Printing House for the Blind

Curran, E. P. (1988). *Just enough to know better: a braille primer*. Boston, MA: National Braille Press

Duncan, B. (1969). *Touch and tell*. Louisville, KY: American Printing House for the Blind

Duckworth, B. J. & Ranking, E. (1985). *Braille unit recognition battery: diagnostic test of grade 2 literary braille: manual*. Louisville, KY: American Printing House for the Blind

Expanded Dolch word cards [kit]. Louisville, KY: American Printing House for the Blind [n.d.]

Hepker, N. L. (1994). *Braille too: an instructional braille reading and writing program for secondary students*. Cedar Rapids, IA: Grant Wood Area Education

Krebs, B. M. (1987). *ABC's of braille*. Louisville, KY: American Printing House for the Blind

Mangold, S. S. (1977). *The Mangold developmental program of tactile perception and braille letter recognition*. Castro Valley, CA: Exceptional Teaching Aids

Mangold, S. S. & Mangold, P. (1986). *Mangold math #1* [kit]. Castro Valley, CA: Exceptional Teaching Aids

Mangold, P. (1993). *Teaching the braille slate and stylus: a manual for mastery*. Castro Valley, CA: Exceptional Teaching Aids

Mangold, S. S. & Pesavento, M. E. (1994). *Teaching signature writing to those who are visually impaired [videorecording]: a training program for teachers and parents*. Castro Valley, CA: Dr. Sally Mangold

Mangold, S. S. (1994). *Teaching the braille slate and stylus* [videorecording]. Castro Valley, CA: Exceptional Teaching Aids

Northcott, J. (1998). *Braille is obsolete! Now we've heard it all* [videorecording]. Saskatoon, SK: Insight Conference Committee

Rex, E. J. (1994). *Foundations of braille literacy*. New York, NY: American Foundation for the Blind

Risjord, C., Stratton, J. M. & Christensen, S. (1995). *Literary braille refresher course for teachers and transcribers*. New York, NY: National Braille Association

Schubert, L. (1982). *Handbook for learning to read braille by sight*. Louisville, KY: American Printing House for the Blind

Swenson, A. M. (1999). *Beginning with braille: firsthand experiences with a balanced approach to literacy*. New York, NY: American Foundation for the Blind

Wormsley, D. P. & D'Andrea, F. M. (1997). *Instructional strategies for braille literacy.* New York, NY: American Foundation for the Blind

Section XIII – Contact Information

Publishers

American Action Fund for Blind Children and Adults
18440 Oxnard Street
Tarzana, CA 91356 USA
Telephone: (818) 343-2022

American Foundation for the Blind (AFB)
11 Penn Plaza, Suite 300
New York, NY 10001
Telephone: (212) 502-7647
Fax: (212) 502-7774
http://www.igc.apc.org/afb/index.html

American Printing House for the Blind (APH)
P.O. Box 6085
Louisville, KY 40206-0085
Telephone: 800-223-1839

Aroga Technologies (Edmonton)
#305 – 10106 – 111 Avenue
Edmonton, AB T5G 0B4
Telephone: 877-274-1144

Aroga Technologies (Vancouver)
1611 Welch Street
North Vancouver, BC VTP 3G9
Telephone: 800-561-6222
www.aroga.com

Betacom
450 Matheson Boulevard East, Unit 67
Mississauga, ON L4Z 1R5
www.betacom.com

Canadian Braille Authority
http://www.langara.bc.ca/cba/

Canadian National Institute for the Blind (Regina)
2550 Broad Street
Regina, SK S4P 3Z4
Telephone: (306) 525-2571
www.cnib.ca

Canadian National Institute for the Blind (Saskatoon)
1705 McKercher Drive
Saskatoon, SK S7H 5N6
Telephone: (306) 374-4545
www.cnib.ca

Canadian National Institute for the Blind Library (Toronto)
1929 Bayview Avenue
Toronto, ON M4G 3E8
Telephone: (416) 480-7544
http://www.cnib.ca/library/visunet/visucat.htm

The Center for Applied Research in Education Subs of Prentice Hall, Inc.
P.O. Box 430
West Nyack, NY 10994 USA
Telephone: (201) 767-5937

Exceptional Teaching Aids
20102 Woodbine Avenue
Castro Valley, CA 94546
http://www.exceptionalteaching.com
EXTeaching@aol.com

Exclusive Educational Products
243 Saunders Raod
Barrie, ON L4M 637
Telephone: (705) 705-1166
Fax: (705) 725-1167

Foothills Academy Society
745 – 37 Street NW
Calgary, AB T2N 4T1
Telephone: (403) 270-9400

Foothills Educational Materials
#250, 200 Rivercrest Drive SE
Calgary, AB T2X 2X5
Telephone: (403) 236-1655
Fax: (403) 279-7303

Frontier Computing
2221 Yonge Street
Suite 406
Toronto, ON M4S 2B4
Telephone: 800-480-0000
www.frontiercomputing.on.ca

Hadley School for the Blind
700 Elm Street
Winnetka, IL 60093-9986
Telephone: 800-323-4238
http://www.hadley-school.org
Free braille classes for teachers and parents

Human Kinetics
Distributed in Canada by
E. A. Milley Enterprises Inc.
Mulberry Lane, R.R. #1
Locust Hill, ON L0H 1J0
Telephone: 800-399-6858
Fax: 800-363-2665

Inegra
Dawson Creek, BC V1G 4E2
Telephone: (250) 782-3380
Fax: (250) 782-7043
Gcook@mail.sd59.bc.ca

Learning Resources Distribution Centre
1500 – 4th Avenue
Regina, SK S4P 3V7
Telephone: (306) 787-5987
http://lrdc.sasked.gov.sk.ca

Lighthouse Industries
111 East 59th Street
New York, NY 10022-1202
Telephone: (212) 821-9200
http://www.lighthouse.org/index.html
education@lighthouse.org

Magic Lantern Communications Ltd.
775 Pacific Road, Unit 38
Oakville, ON L6L 6M4
Telephone: 800-263-1717
Fax: (905) 827-1154

Marlin Motion Pictures Ltd.
211 Watline Avenue
Mississauga, ON L47 1P3
Telephone: (905) 890-1500
Fax: (905) 890-6550

McGraw-Hill Ryerson Ltd.
300 Waters Street
Whitby, ON L1N 9B6
Order Desk: 800-565-5758
Fax: 800-463-5885

Mostly Mobility
R.D. 1, Box 1448A
Bethel, PA 19507 USA
Telephone: (717) 933-5681

Pennsylvania College of Optometry Bookstore
1200 West Godfrey Avenue
Philadelphia, PA 19141 USA
Telephone: (215) 276-6200

Perkins School for the Blind
175 North Beacon Street
Watertown, MA 02172-2790
Telephone: (617) 924-3490
Fax: (617) 926-2027
http://www.perkins.pvt.k12.ma.us

Recording for the Blind and Dyslexic
20 Roszel Road
Princton, NJ 08540
Telephone: 800-221-4792
Fax: (609) 987-8116

Robinet Publication
P.O. Box 1512
Windsor, ON N9A 6R5
Telephone: (519) 978-3358

SAVI/SELPH (Lawrence Hall of Science)
University of California
Berkeley, CA 94720
Telephone: (510) 642-8941
http://www.1hs.berkeley.edu/FOSS/SAVI_SELPH.html

Scalans Publishing
Box 158123
Nashville, IN 37215

Seedlings
P.O. Box 51924
Livonia, MI 48151-5924
Telephone: 800-777-8552
Fax: (734) 427-8552
http://www.seedlings.org
mail to: seedlink@aol.com

Teachers College Press
Teachers College
Columbia University
1234 Amsterdam Avenue
New York, NY 10027 USA
Orders to:
P.O. Box 20
Williston, VT 05495-0020 USA
Telephone: 800-488-2665

Texas School for the Blind and Visually Impaired
1100 W, 45th Street
Austin, TX 78756-3494
Telephone: 800-872-5273
http://www.tsbvi.edu

Twin Sisters Product Inc.
1340 Home Avenue, Suite D
Akron, OH 44310-2570 USA
Telephone: (216) 633-8900
800-248-8946

Visu-Aid
841 Boulevard Jean-Paul-Vincent
Longeuil, PQ J4G 1R3
Telephone: 800-723-7273
http://www.visuaide.com
French language adaptive software

Wikki Stix Co.
2432 W Peoria Avenue, Suite 1188
Phoenix, AZ 85029 USA
Telephone: 800-869-4554
800-TOWIKKI

Specialized Materials, Equipment and Technology

A B See
6749 Lasalie Street
Vancouver, BC V5S 3X4
Telephone: (604) 432-1711
Fax: (604) 432-1721
Equipment: Large Print DOS

Aroga Technologies (Edmonton)
#305 – 10106, 111 Avenue
Edmonton, AB T5G 0B4
Telephone: 877-274-1144

Blazie Engineering
105 E Jarrettsville Road, Unit D
Forest Hill, MD 21050 USA
Telephone: (410) 893-9333
Fax: (410) 836-5040
Equipment: IBM Screen Reader, JAWS, Outspoken, Braille 'n Speak, Braille Lite, Duxbury, Type 'n Speak

Carousel
497A Garbally Road
P.O. Box 43009
Victoria, BC V8X 3G2
Telephone: (604) 388-1146
Equipment: IBM Screen Reader

Duxbury
435 King Street
P.O. Box 1504
Littleton, MA 01460 USA
Equipment: Duxbury

EYES – Entering Your Ear Systems
657 Goulding Street
Winnipeg, MB R3G 2S3
Telephone: (204) 775-1789
Fax: (204) 783-0055
Equipment: JAWS, Braille 'n Speak, Braille Lite, Duxbury

HMI Computer Group
#104, 20577 Langley By-pass
Langley, BC V3A 5E8
Telephone: (604) 533-5400
Equipment: JAWS

L S & S Group
P.O. Box 673
Northbrook, IL 60065 USA
Telephone: 800-468-4789
(708) 498-9777
Fax: (708) 798-1482
E-mail: LSSGRP@aol.com
Equipment: Intelitalk, JAWS, Outspoken, IBM Screen Reader, IBM Zoom Text, MAGic, VisAbility, Mac inLarge, Braille 'n Speak, Duxbury

Raised Dot Computing
408 South Baldwin Street
Madison, WI 63703 USA
Telephone: (608) 257-9595
Fax: (608) 257-4143
Equipment: MegaDots

Telesensory Systems
455 N Bernardo Avenue
P.O. Box 755
Mountain View, CA 94039-7455 USA
Telephone: (415) 960-0920
800-227-8418
Fax: (415) 969-9064
Equipment: PowerBraille

Section XIV – Community Resources in Saskatchewan

Accessibility for the Disabled
Sask. Transportation Company
Customer Services Department
2041 Hamilton Street
Regina, SK S4P 2E2
Telephone: (306) 787-3340

Canadian National Institute for the Blind (Regina)
2550 Broad Street
Regina, SK S4P 3Z4
Telephone: (306) 525-2571

Canadian National Institute for the Blind (Saskatoon)
1705 McKercher Drive
Saskatoon, SK S7H 5N6
Telephone: (306) 374-4545

Low Vision Clinic
Contact CNIB – Regina and Saskatoon

Neil Squire Foundation
100 – 2445 – 13th Avenue
Regina, SK S4P 1T7
Telephone: (306) 781-6023

Regina Catholic School Division 81
2160 Cameron Street
Regina, SK S4T 2V6
Telephone: (306) 791-7200

Regina Public School Division No. 4
1600 – 4th Avenue
Regina, SK S4R 8C8
Telephone: (306) 791-8200

Saskatchewan Abilities Council
2310 Louise Avenue
Saskatoon, SK S7J 2C7
Telephone: (306) 343-4448

Saskatchewan Aids to Independent Living (SAIL)
Special Needs Equipment –
Saskatoon: (306) 374-4448
Program Administration
3475 Albert Street
Regina, SK S4S 6X6
Telephone: (306) 787-7121
Fax: (306) 787-8679

Saskatchewan Blind Sports Association
510 Cynthia Street
Saskatoon, SK S7L 7K7
Telephone: (306) 975-0888
Fax: (306) 242-8007

Saskatchewan Learning:

Resource Centre
1945 Hamilton Street
Regina, SK S4P 3V7
Telephone: (306) 787-5998
Fax: (306) 787-3164

Special Education Unit (ACCESS)
2220 College Avenue
Regina, SK S4P 3V7
Telephone: (306) 787-1183
Fax: (306) 787-2223

Special Needs Programs Unit
12th Floor, 1945 Hamilton Street
Regina, SK S4P 3V7
Telephone: (306) 787-5602

Saskatoon Catholic School Division 20
420 – 22nd Street East
Saskatoon, SK S7K 1X3
Telephone: (306) 668-7000

Saskatoon Public School Division 13
310 – 21st Street East
Saskatoon, SK S7K 1M7
Telephone: (306) 683-8200

South Saskatchewan Independent Living
2240 Albert Street
Regina, SK S4P 2J7

Ted Ohlsen Fly In Camp
Northern Lights Camp Pelican Narrow
Reservation & Information
Box 471, Weyburn, SK S4H 2K3
Telephone: (306) 465-2883

Section XV – Internet Resources

Visual Impairment sites you need for survival:

http://www.tsbvi.edu/

Visual Impairment technology:

http://www.apple.com/disability/

http://www.intellitools.com

http://www.icon.palo-alto.med.va.gov/western2.htm

http://www.magnifiers.org/

Technology resources:

http://www.resna.org/reshome.htm

http://www.dpi.state.nc.us/Curriculum/computer.skills/

Visual Impairment special interest:

http://www.tsbvi.edu/spacehome.htm

http://www.ropard.org/history.html

For ophthalmology resources:

http://business.hol.gr/~ophthalmology/webopht.htm

http://www.medem.com/MedLB/bufferpage_aao.cfm

http://www.blind.msstate.edu/irr/ophtha.html

http://www.spedex.com/resource/documents/veb/introduction.htm

http://www.blind.msstate.edu/irr/diseases.html

Descriptive video resources:

http://www.blind.net/bcompany.htm

Vision products:

http://www.blind.net/bcompany.htm

http://aph.org

http://www.netdirect.net/vision-enhancement/

http://www.tack-tiles.com/

http://www.lowvision.org/

http://www.toy-tma.org/industry/publications/blindcurrent/contents.htm

http://www.dftoys.com/webdragonca/main/nclk

http://www.cnib.ca

http://www.aerbvi.org/welcome.htm

http://www.afb.org/default.asp

http://www.apsea.ca/index.htm

http://www.nyise.org/blind.htm

http://www.brl.org

http://www.brailleauthority.org/ (BANA)

http://www.nmsu.edu/~mavis/

http://www.afb.org/info_document_view.asp?documentid=355

http://www.azstarnet.com/~dotmakr/

http://promo.net/pg/list.html

http://www.taevisonline.purdue.edu/index.html

http://aph.org/louis.htm

http://www.web-xpress.com/athens/vatesde.html

http://members.aol.com/LSWebDesgn/Lnroom.html

http://www.chocobraille.com/

http://www.viguide.com/vsncuradapt.htm

http://snow.utoronto.ca/

http://ourworld.compuserve.com/homepages/Peter_Meijer/winmath.htm

http://www.lowvision.org/

http://www.viguide.com/magrack.htm

http://home.swipnet.se/macula-lutea/eng.html

http://www.trace.wisc.edu/conet-bin/xad?Mn=index.html&db=3&ds=009&p=13 (just assistive technology

http://www.tsbvi.edu/Education/books.htm

SET-BC

http://www.setbc.org/

http://www.setbc.org/special/virg/

http://www.setbc.org/res/equip/

http://www.setbc.org/res/guides/

Section XVI – References

Alberta Education, Special Education Department. (1996). *Programming for students with special needs. Teaching students with visual impairments.* Edmonton, AB.

Alberta Learning. (2002). Materials Resource Centre for the Visually Impaired *Equipment catalogue*. Edmonton, AB.

Barraga, N. (1970). *Teacher's guide for development of visual learning abilities and utilization of low vision*. The University of Texas at Austin, American Printing House for the Blind. Louisville, KY.

British Columbia Ministry of Education. (2003). Victoria, BC.

Calgary Board of Education. (1995). Calgary, AB.

Forest, M. & Lusthaus, E. (1990). Everyone belongs: With the MAPS action planning system. *Teaching Exceptional Children*. Original source as cited in*: Creating an Inclusive Classroom: Integrating Students with Special Needs*, Saskatchewan Professional Development Unit (SPDU) and Saskatchewan Instructional Development and Research Unit (SIDRU), (1996), Saskatoon, SK.

Koenig, A. J., & Holbrook, M. C. (1993). *Learning media assessment of students with visual impairments – A resource guide for teachers*. Texas School for the Blind and Visually Impaired.

Levack, N. (1994). *Low vision – A resource guide with adaptations for students with visual impairments* (2nd ed.) Texas School for the Blind and Visually Impaired.

Levack, N., & Loumiet, R. (1993). *Independent living series - A curriculum with adaptations for students with visual impairments* (2nd ed.) Texas School for the Blind and Visually Impaired.

Lyndon, W. T., & McGraw, M. L. (1973). *Concept development for visually handicapped children*. American Foundation for the Blind, Inc.

Mackenzie, C. (1986). *Standard vision screening training manual*. Claire Mackenzie, Publisher.

Mangold, S. S. (1982). *A teacher's guide to the special educational needs of blind and visually handicapped children*. American Foundation for the Blind, New York, NY.

Ministry of Education, Province of British Columbia. (1985). *The visually impaired student in the regular classroom, Resource book.* Victoria, BC.

Ministry of Education, Province of British Columbia. (1995). *Students with visual impairments – A resource guide to support classroom teachers*.

Morgan, E. (1995). *Resources for family centered intervention for infants, toddlers, and preschoolers who are Visually Impaired:* VIISA Project (pp 828 – 829), Logan, UT: Hope Inc. SKI-HI Institute Department of Communicative Disorders, Utah State University.

Napier, G. D., Kappan, D. L., Tuttle, D. W., Schrotberger, W. L., Woodrow L., & Dennison, A. L. (1981). *Handbook for teachers of the visually impaired*. American Printing House for the Blind. Louisville, KY.

Ontario Ministry of Education. (1987). *Vision resource guide*.

Roessing, L. J. *Minimum competencies for visually impaired students*. Kennedy High School Fremont, CA.

Saskatchewan Education. (1992). Guidelines for blind students in Saskatchewan: *A developmental curriculum and resource guide.* Regina, SK: Author.

Saskatchewan Education. (1992). *Guidelines for low vision students in Saskatchewan: A developmental curriculum and resource guide*. Regina, SK: Author.

Saskatchewan Learning. (2002). Children's Services Policy Framework. Regina, SK: Author.

Saskatchewan Professional Development Unit. (1996). *Creating an inclusive classroom: Integrating students with special needs*. Diversity in the Classroom Series No. 7.

Scholl, G. T. (1986). *Foundations of education for blind and visually handicapped children and youth – Theory and practice*. American Foundation for the Blind Inc. New York, NY.

Telesensory Systems Ltd. Mountain View, CA.