THE INCLUSION OF STUDENTS WITH SEVERE VISUAL IMPAIRMENTS IN GRADES 7 TO 12 REGULAR PHYSICAL EDUCATION CLASSES

by

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ABSTRACT

Numerous researchers have argued that restricted access to Physical Education (PE) classes results in lower fitness levels for students with visual impairments. This is particularly true for students with severe visual impairments (SVI), who often have lower fitness levels than their peers with partial sight and normal sight.

This study investigated the extent to which students with SVI are included in regular public school PE classes. The study focuses on grades seven to twelve students with SVI who do not have additional disabilities. The present study also sought to determine the relative importance of the factors identified by Bishop (1986) and Watkinson and Bentz (1986) which promote or prevent full inclusion. In addition, this study examined the strategies commonly employed to facilitate the inclusion of exceptional learners in regular PE classes; namely the development and distribution of adapted PE resource literature. The study will consider the utilization of a manual, “Moving to Inclusion Manual for Students with Visual Impairments”, designed to facilitate the inclusion of students with SVI.

The study was exploratory and is intended to investigate the following research questions:

1. How do District Resource Teachers- Vision (DRT-VIs) and PE Teachers characterize or categorize the participation of their
students with SVI?

2. Which activities or sports are the most difficult for teachers to adapt for students with SVI?

3. In terms of facilitating the inclusion of students with SVI in PE, how important are factors relating to:
   - the student with a SVI;
   - the family of a student with SVI;
   - the school environment;
   - the community; and
   - the features of adapted PE resource materials (e.g., manuals)?

4. How helpful are the adapted resource manuals to DRT-VI's and PE teachers?

5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?

   District Resource Teachers- Vision (DRT-VIs) and PE Teachers (from eight Lower Mainland school districts) who have experience teaching students with SVI in PE participated by completing a survey designed to address the aforementioned research questions.

   The study found that there is a link between (severe) disabilities and restricted levels of participation in PE. The study clearly
demonstrates that access to PE programs can be established in inclusive schools. In addition, the study identified areas that require attention and modification in PE programming. For example, limited participation of students with SVI may be connected to variables relating to the student with a SVI, the student’s family, school environment, and community, and adapted resource materials. Moreover, particular sports activities may pose unusual challenges to inclusion.

Findings call attention to the need for continued investigation into the status of students with (S)VI in PE programs. The results of this study underscore the necessity of developing and sharing teacher expertise and adapted PE resources in order to fully include students with visual impairments in PE programs.
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CHAPTER I
Introduction and Problem Identification

Introduction

Never check the actions of ...blind child[ren]; follow them and watch [them] to prevent any serious accidents, but do not interfere unnecessarily; do not even move obstacles which [they] would learn to avoid by tumbling over them a few times. Teach [them] to jump rope, to swing weights, to raise [their] bod[ies] by [their] arms, and to mingle, as far as possible, in the rough sports of the older students.... Do not too much regard bumps upon the forehead, rough scratches, or bloody noses, even these may have their good influences. At worst, they affect only the bark, and do not injure the system, like the rust of inaction." Samuel Gridley Howe (1841), the first director and founder of the Perkin’s Institute, a residential school for the blind (Sherrill, 1986, p. 662).

The purpose of this study is to ascertain the manner and extent to which students with "severe visual impairments" (SVI) are included in regular public school Physical Education (PE) classes. The study focuses on grades seven (7) to twelve (12) students with SVI who attend public schools in the Lower Mainland who do not have additional
disabilities. It will be shown that inclusion is important for this population of students.

This study seeks to determine the relative importance of the factors identified by Bishop (1986) and Watkinson and Bentz (1986) which promote or prevent full inclusion. In addition, the present study will examine the strategies commonly employed to facilitate the inclusion of exceptional learners in regular PE classes; namely the development and distribution of adapted PE resource literature. The study will consider the utilization of a manual, "Moving to Inclusion Manual for Students with Visual Impairments" (hereafter, MTI-VI), designed to facilitate the inclusion of students with SVI.

The social and educational principles on which the inclusion of exceptional students in regular education classrooms is based is integral to the overall study. Issues related to inclusionary practices, such as service delivery and resource materials, transcend local practices and extend to encompass all students with SVI and their teachers across Canada. It is hoped that the present study will contribute to the implementation of inclusion in PE programs for grades seven to twelve students with SVI.

**Background of the Problem**

The importance of vision to normal development cannot be overemphasized and, as a result, has long been documented (Cronin, 1992; Hill, 1990; Hatlen & Curry, 1987; Rogow, 1988; Sherrill, 1984,
Hatlen and Curry (1987) argued that students with visual impairments "...have unique educational and developmental needs that are direct results of their inability, or limited ability, to observe the environment accordingly..." (p. 7). Considering the importance of visual information, it is not surprising that students with visual impairments are at risk for delay in the mastery of motor milestones, gait pattern problems, and deficits in mobility (Hatlen & Curry, 1987). Unless issues of this population’s potential deficits are addressed and remedied from the onset of visual impairment, students with severe visual impairments may be significantly delayed in motor development (Sherrill, 1993). For the purposes of this thesis, students with severe visual impairments (SVI) are defined as those who use the white cane for Orientation and Mobility and/or are braille users. These students depend on senses other than vision for their principal sources of information (Levack, 1994). Due to the severity of their visual disability, educational programming for these students incorporates braille and/or cane skill instruction (Levack, 1994).

In Canada there has been a substantial shift to inclusionary models of education. As a result, students with visual impairments are included in regular education. This is in contrast to traditional models of education that feature a "...dual system of educational service delivery (regular and special education)..." to meet individualized student needs (Andrews & Lupart, 1993, p. 2). Andrews and Lupart
(1993) and other authors consider that the dual system model resulted in fragmented programming and instruction, student classification and categorization, and segregated learning environments.

In contrast, the inclusionary models provide a unified system of educational service delivery (a merger of special and regular education) which addresses all of the learning needs of students (Andrews & Lupart, 1993). Inclusionary practices encompass all aspects of school programs including psychomotor development and, therefore, Physical Education (PE) (Goodwin, 1987; Williams, 1991).

According to Williams (1991), there are eight curricular objectives of PE; they include developing efficient movement abilities, experiencing a wide range of movement forms, developing positive social relationships, attaining expertise and understanding related to physical activity, developing the ability to create and modify physical activities, developing a functional level of physical fitness, pursuing a healthy lifestyle, and becoming aware of opportunities to pursue career goals related to PE (Williams, 1991). It is current practice in British Columbia to include students with SVI in all aspects of regular school programs, including PE. Recent British Columbia and Canadian legislation reflects the shift from segregated to inclusive education (Andrews & Lupart, 1993; Ministry of Education [MOE], 1995a).
Statement of the Problem

Students with visual impairments constitute a heterogeneous group who share only one commonality, limited sight. Visual impairments impede normal development and require adaptations and modifications to regular education programs (Hill, 1990; MOE, 1995a; Rogow, 1988). Students with visual impairments in British Columbia have been integrated into regular education programs in public schools since 1978 with the closing of the Jericho Hill School for the Blind (Hass, 1994). Bishop (1986) writes that placement of students with a visual impairment in an integrated educational environment has been the “preferred choice for over 75 years” (p. 939). While advocates of total inclusion applaud efforts to integrate students into all aspects of school programs, they acknowledge the continued need for a continuum of special supports and services within the integrated classroom (Pearpoint & Forest, 1992; Stainback & Stainback, 1992). Many researchers and specialist resource teachers have identified the need to evaluate the modifications that are being made for learners with visual impairments (Bishop, 1986; Curry & Hatlen, 1988; Hatlen, 1990, 1996; Pagliano, 1989; Spungin, 1989; Ponchillia, 1995).

There are few studies which attempt to define successful inclusion in PE programs and the variables which contribute to this success (Bishop, 1986). Despite the move to inclusion, British Columbia’s special education services vary considerably from one school district to
another and reflect local conditions (Hass, 1994). Although more students with disabilities now attend their neighborhood schools, access to quality integrative PE programs is not ensured (Bowden & Thorburn, 1993). It is important to examine how students with SVI are being accommodated in regular PE (Bishop, 1986; Curry & Hatlen, 1988; Decker & Jansma, 1995; Hill 1990; Pagliano, 1989; Spungin, 1989). Students may not, in fact, be able to access the benefits that inclusion in PE purportedly affords (Williams, 1991). There are problems in providing appropriate quality PE services for students with visual impairments (Buell, 1982; Dickinson, Perkins, & Bilek, 1988; Ponchillia, 1995). Yet PE is important for students with visual impairments as they often have significantly lower fitness levels than their sighted peers (Hopkins, Gaeta, Thomas, & Hill, 1987; Sherrill, 1993). Moreover, students with severe visual impairments have lower fitness levels than other students with less impaired sight. Studies of the cardiorespiratory fitness demonstrate that fitness levels of students with SVI and VI can be significantly improved and, ultimately, raised to the level of sighted persons.

Nevertheless, participation in PE classes and school athletic programs continues to be generally restricted for these students. Ponchillia (1995) stated that "...unless youngsters have enough residual vision to perform at the level of their sighted peers, there is little possibility that they will receive the full benefits of [PE]" (p. 6).
Watkinson and Bentz (1986) found that students with disabilities are often scheduled academic classes or other activities instead of PE classes. Curriculum planning for students with VI tends to "overemphasize academics" and other important curricular issues such as literacy (Curry & Hatlen, 1988; Irving, 1993; Sherrill, 1993). The practice of focusing only on academic demands not only denies them skill and fitness, but also hampers their ability to make and keep friends (Sherrill, 1993). As students with VI progress into middle or secondary school these deficits in social competence may become increasingly pronounced (Sherill, 1993). Further, many specialists in the field of Vision Impairment report that secondary and middle school PE curriculum is more difficult to adapt to meaningfully include exceptional students (Williams, 1991). It has also been shown that secondary school teachers make fewer pro-inclusion modifications than do their elementary colleagues (Hill, 1990; Hatlen and Curry, 1987). It is, therefore, appropriate and necessary to explore current practices and identify those factors that will enable and optimize the participation of students with SVI in regular middle and secondary PE programs.

The inability of teachers to accommodate students with visual impairments in PE is related to a lack of "professional training and development", "pooling of resources", and "administrative leadership and support" (Andrews & Lupart, 1993; Stainback & Stainback, 1985; Stainback, Stainback, & Forest, 1989). Few Canadian or American
university preparatory programs for specialist teachers require these professionals to undertake extensive training in the area of adapted PE (Head & Bishop, 1990; Ponchillia, 1995; Goodwin, 1987). PE Teachers are often not knowledgeable about how to adapt programs for students with SVI and time constraints often preclude their ability to provide individualized instruction (Andrews & Lupart, 1993; Hatlen and Curry, 1987, Stainback, 1985, 1989). SVI is a low incidence disability and most PE Teachers rarely encounter students with SVI and are inexperienced with this population (Dickinson et al., 1988).

The ability of District Resource Teachers-Vision Teachers (DRT-VIs) to assist PE Teachers to facilitate inclusion of students with visual impairments is compromised by a paucity of related database research and information (Williams, 1991; Goodwin, 1986; McClenaghan, 1981; Post & Roy, 1985; Augsesser, 1981). Experts in the field have attempted to disseminate information in the form of adapted PE manuals. These instructional materials can help to maximize the value of adapted instruction (Wang, 1989; Andrews & Lupart, 1993). However, few, if any empirical follow-up studies on the efficacy of these resource manuals have been conducted. One such set of resource manuals, the “Moving to Inclusion: Active Living Through Physical Education” manuals consists of nine disability-specific resource modules related to a PE setting. One of these resource modules, “Moving to
Opportunities for Students with a Visual Impairment" (hereafter, MTI-VI), addresses the specific PE needs of students with VI (Canadian Council for the Blind, 1993; Fitness Canada, 1994). The MTI-VI was recently revised and distributed nationally in 1995 by the Canadian Association for Health, Physical Education, Recreation, and Dance (CAHPERD), the Canadian Blind Sports Association, the Canadian Council for the Blind, and the Canadian Intermurals and Recreation Association (CIRA), and Fitness Canada. "Doclets", or abridged versions of the nine resource modules or manuals were distributed to every school in Canada. The Integrated Resource Package for PE (1995) frequently refers to these manuals as “provincially recommended material”; they are cited as resources for teachers to facilitate inclusion, active living, movement, and social responsibility (MOE, 1995b). The present study will investigate the efficacy of the module of the manual pertaining to students who are blind or visually impaired (MTI-VI) in the inclusion of students with SVI in grades seven to twelve regular PE programs. The present study will also research whether teachers believe that the MTI-VI and other resource material would be more effective if they contained anecdotal stories or case studies that illustrate how students with SVI can be successfully included in regular PE. This study considers the views of both DRT-VIs and regular PE Teachers regarding the utility of the MTI-VI manual and other adapted
PE resources at their disposal. Such consideration may clarify the types of materials that are most helpful to these teachers.

The participants of this study are specialist resource teachers and grade 7 to 12 PE Teachers. A survey has been designed to enable teachers to identify the concerns that they have for their students with SVI. The responses of the teachers will be analyzed to determine the status of students with visual impairments in PE, PE activity-specific inclusion problems, as well as the usefulness of the MTI-VI. It is hoped that the study will contribute to increased knowledge and improvement of adapted PE resource materials.

**Research Questions:**

The study focuses on the following questions:

1. How do DRT-VIs and PE Teachers characterize or categorize the participation of their students with SVI?
2. Which activities or sports are the most difficult for teachers to adapt for students with SVI?
3. In terms of facilitating the inclusion of students with SVI in PE, how important are factors relating to:
   - the student with a SVI;
   - the family of a student with SVI;
   - the school environment;
   - the community; and
• the features of adapted PE resource materials (e.g., manuals)?

4. How helpful are the adapted resource manuals to DRT-VIs and PE Teachers?

5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?
Definition of Terms

Visual Impairment

The Canadian National Institute for the Blind defines a visual impairment as i) ‘low vision’, 20/60 to 20/190, and ii) ‘legal blindness’ as 20/200 or worse (with appropriate corrective lenses) in the better eye and/or a field of vision less than 20 degrees (even if the individual’s vision is better than 20/200). Visual impairment for the purposes of this study includes defects of visual acuity, visual fields, and total blindness. An impairment may lead to a disability.

Severe Visual Impairments (SVI)

For the purposes of this study, students with severe visual impairments are defined as those who use a white cane for Orientation and Mobility and/or are braille users.

Visual Acuity

Visual acuity is the “physical measurement of the ability of the eye to see details of objects or symbols at specified distances” as determined by an optometrist or ophthalmologist (Rogow, 1988, p. 35). A student with an acuity of 20/70 “...may have adequate vision for gross object perception, but not for seeing fine detail...” (Rogow, 1988, p. 35). It should be noted that measures of acuity may be contingent on environmental circumstances, such as weather and lighting conditions, on student factors such as student fatigue, and on task variables such
as color and contrast (Corn, 1983; Faye, 1976; Levack, 1994; Rogow, 1988; Sleeuwenhoek, Boter, & Vermeer, 1995).

**Visual fields**

There are two types of visual fields—central and peripheral. Visual fields pertain to central and peripheral vision (Rogow, 1988). Students may experience loss in central and/or peripheral fields. In addition, each eye may manifest different profiles of field loss (Levack, 1994; Rogow, 1988).

**Visual efficiency**

Visual efficiency refers to the students' ability to utilize residual vision (Levack, 1994; Rogow, 1988). It has been estimated that eighty per cent or more of people who are legally blind retain varying amounts of functional, residual vision (Sherrill, 1993).

**Congenital Visual Impairment**

Differences in students' experience with vision loss are related to the age of onset of the visual impairment. Congenital visual impairments are present at birth or shortly thereafter.

**Adventitious Visual Impairment**

Adventitious visual impairment occurs through accident or disease. (Rogow, 1988; Sherrill, 1993). Students who experience visual loss after the age of three years have developed visual skills and visual memory.
Inclusion

According to the British Columbia Ministry of Education (MOE), "inclusion is the value system that holds that all students are entitled to equitable access to learning, achievement, and the pursuit of excellence in all aspects of their education. The practice of inclusion transcends the idea of physical location, and incorporates basic values that promote participation, friendship, and interaction" (MOE, 1995a, p. 7).

For the purposes of this study, integration will be defined as a major strategy employed to affect an inclusive philosophy (MOE, 1995a).

Modified and Adapted Programs

The inclusion of students with (severe) visual impairments generally requires the development of modified or adapted programs. A modified program is characterised by 'learning outcomes' which are 'substantially different' from the prescribed curriculum, and individualised to address the student's special needs" (MOE, 1995a, p. 8). Adapted programs preserve the learning outcomes delineated in the prescribed curriculum, but are adapted to permit a student's participation (MOE, 1995a, p. 7). Adaptations may take the form of alternate formats, such as braille, alternative assessment procedures, such as oral exams, and instructional strategies, such as visual aids.
Adapted Physical Education

Adapted PE is represented by a diversified and multifaceted program of developmental activities, sports, and games suited to the interests, capacities, and limitations of students with disabilities (DePauw, 1981).

Orientation and Mobility

The term Orientation refers to the knowledge of one's environment and awareness of objects in relation to each other and to oneself (Bentley, 1970). Orientation includes the ability to identify one's position in the environment (Sleeuwenhoek et al., 1995). Body awareness is an integral part of spatial awareness (Cratty, 1971; Hart, 1987; Lawther, 1968).

Mobility refers to the ability to move safely and efficiently from one location to another (Pogrund, et al. 1993; Sleeuwenhoek et al., 1995). Independent travel may necessitate the use of the white cane or an electronic travel aid (Pogrund, et al., 1993; Rogow, 1988; Sleeuwenhoek et al., 1995;). Orientation and Mobility (O and M) is a key component of the curriculum for students with (severe) visual impairments (MOE, 1995a).
CHAPTER II
Review of the Literature

This review of the literature will examine the legislative foundations for inclusive education in British Columbia, integration of students with (S)VI in PE, and the benefits of and obstacles to integration in PE.

Inclusive Education in British Columbia

"Inclusion" and "integration" have been defined in various ways and these definitions reflect a diversity of opinions and interpretations (Fuchs & Fuchs, 1991, 1994). These various definitions reflect the diversity of opinion and interpretation regarding the intent, extent, and nature of "inclusion" and "integration". The ITP Nelson Canadian Dictionary defines the word 'include' to mean "take in as a part, an element, or a member" (p. 688). Andrews and Lupart (1993) explains inclusion as being a "the merger of special and regular education" (p. 5). Stainback and Stainback (1996), and Block and Volger (1994) note that the 1990's have witnessed a general consensus that inclusion is considered radical special education reform. In the spirit of this education reform all students, heedless of disability, should be educated in regular classes in inclusive schools (Gartner & Lipsky, 1987; Giangreco, Dennis, Cloniger, Edelman, & Shattman, 1993; Sherrill, 1994; Stainback & Stainback, 1992; and York & Vandercook, 1991). Pearpoint and Forest (1992) and other researchers hope that inclusion portends the end of labeling, special classes, and special education, but
not the end of the requisite supports and service in the integrated classroom.

Proponents of (full) inclusion cite varied and provocative arguments for inclusion of all students with disabilities. According to Snell (1991), the three most important benefits of integration to students with disabilities are the development of social skills, change in attitudes towards children with disabilities, and the development of friendships with peers (Fuchs & Fuchs, 1994). The goal of inclusion is to ensure community participation on the part of students with special needs (Fuchs & Fuchs, 1994; Gartner & Lipsky, 1987; Stainback & Stainback, 1990). Opportunities to study side by side with non-disabled peers provides students with social models not available in segregated settings (Giangreco & Putnam, 1991; Halvorsen and Sailor, 1990; Falvey, 1988; Stainback & Stainback, 1990).

The inclusion of student with visual impairments in a British Columbia school context is part of a trend to provide for all students with special needs in regular classrooms (Andrews & Lupart, 1993; Titlow & Ishee, 1986; Winnick, 1990). This trend emerged throughout North America and has its origins in the civil rights movements. American and Canadian parents have advocated for their children’s rights to attend schools with their non-disabled peers and have successfully changed the model of special education from a segregated to an inclusive model. In the U.S., private litigation proceedings in the
courts and the enactment of Public Laws 93-112 (1973) and 94-142 (1975) have advanced the inclusive model of education (Andrews & Lupart, 1993). The concepts incorporated in Public Law 94-142 ("The Education for all Handicapped Children Act") such as "individualized education" and "the least restrictive environment (LRE)", have had a profound influence on the formation of Canadian educational thought and practice (Andrews & Lupart, 1993). The American law interprets integration as access to "...free, appropriate public education emphasizing special education and related services designed to meet [students'] individual needs..." (Winnick, 1990, p. 9). Public Law 93-112, "The Individuals with Disabilities Education Act (IDEA) Section 504 of the Rehabilitation Act of 1973", for example, "...specif[ies] placements, insofar as possible, with nonhandicapped children..." (Bishop, 1990, p. 350). Accordingly, adapted PE may be defined as the development of physical and motor fitness, fundamental motor skills and patterns, taught in both group and individual games and sports (Winnick, 1990).

In Canada, which does not have a national mandate for education, the onus is on each province and territory to establish policy in educational matters (Andrews & Lupart, 1993; Smith & Foster, 1994). Canadian schools reflect provincial and territorial school acts and policies (Andrews & Lupart, 1993, p. 45). In British Columbia, the child’s right to be placed in a regular class is addressed in both the
School Act- Bill 87 (1989) and the School Regulation and Minister of Education Orders #149/89 and #150/89. The principle of 'placement in the most enabling learning environment' serves as a guideline for placement" (MOE, 1995a). The British Columbia Special Needs Student Order #150/89, s. 1 (2) stipulates that:

"[U]nness the educational needs of a handicapped student indicated that the student's educational program should be provided otherwise, a [school] board shall provide that student with an educational program in classrooms where that student is integrated with other students who do not have handicaps" (MOE, 1995a, p. 313). Inclusion dictates that "...all students are entitled to equitable access to learning, achievement, and the pursuit of excellence in all aspects of their education. The practice of inclusion transcends the idea of physical location, and incorporates basic values that promote participation, friendship, and interaction" (MOE, 1995a, p. 7). Compared to other Canadian provinces and territories, the British Columbia standard is one of "...the most far-reaching; regular class placement is a rebuttable presumption, with the needs of the student with disabilities as the only argument that could be advanced to rebut this presumption" (Smith & Foster, 1994, p. 314). As a result of Ministry policies, the British Columbia special education environment has been characterized as "permissive, inclusive, non-categorical, locally autonomous, and learner-focused" (Andrews & Lupart, 1993, p. 55). According to the British Columbia
Manual of Policies, Procedures, and Guidelines for Special Education (1995), if alternatives to neighborhood school placements are needed, the decision must be regularly reassessed.

The Manual of Policies, Procedures, and Guidelines stipulates that integration involves the provision of required accommodations and adaptations, ascertained on an individual basis, to enable students with disabilities to be successful (MOE, 1995a). British Columbia policy holds that services "...should be organized along a continuum which reflects the diversity of special needs and the prevalence levels of various needs in the school population" (MOE, 1995a, p. A 13).

In order to qualify for supplemental funding and specialized teacher assistance, a student with visual impairments must meet the Ministry's criteria of visual impairment, which includes a range of visual difficulties. The terms blind, legally blind, partially sighted, low vision, and cortically visually impaired are encompassed by this criteria (MOE, 1995). Functional definitions describe students whose visual impairment significantly impedes the students' "...ability to participate with ease in everyday activities, ...interferes with optimal learning and achievement, and can result in substantial educational disadvantage, unless adaptations are made in the methods of presenting learning opportunities, the nature of the materials used, and/or the learning environment" (MOE, 1995a, p. E 45). To qualify for special services, students must be diagnosed as having one of the following:
i. a "visual acuity of 6/21 [meters] (20/70 feet) or less in the better eye after correction,

ii. a visual field of 20 degrees or less;

iii. a progressive eye disease with a prognosis of becoming one of the above in the next few years; or

iv. a visual problem or related visual stamina that is not correctable and that results in the student functioning as if his or her visual acuity is limited to 6/21 (20/70) or less...” (MOE, 1995a, p. E. 45).

Although British Columbia legislation falls short of requiring full integration of students (with visual impairments) in all situations, the spirit of inclusion encompasses integration in PE programs (Andrews & Lupart, 1993).

**Integration of Students with (Severe) Visually Impairments in PE Programs**

A wide variety of examples of potential benefits obtained from inclusion in PE have been reported (DePaepe and Bange, 1986). According to DePaepe and Bange (1986), these benefits can be organised into three developmental domains: physical/motor, social, and psychological/emotional (p. 2). Rink (1993) states that the special contribution of PE is in the psychomotor area” (p. 60). Additionally, researchers note that social acceptance of students with disabilities by their communities, schools, and age peers “...may be
greatly enhanced through sport” (DePaepe & Bange, 1986, p. 13).

Exclusion in general has negative effects, especially in regards to self-esteem (Block, 1994; Stainback & Stainback, 1990). Justice Warren (Brown v. the Board of Education, 1954) noted that segregated education often engenders feelings of inferiority in children and impairs their status in their communities, affects their motivation to achieve and impedes their educational and mental development (Warren, 1954).

Fuchs and Fuchs (1994) argue that advocates for students with hearing and visual impairments tenaciously support special schools and a continuum of services on the basis that general education cannot be relied upon to provide needed specialised services to these children, and that it deprives many students of important and socialisation and cultural experiences (e.g., American Council on the Blind et al., n.d., p. 300). Severe visual impairments or total blindness may be associated with a delay in a child’s physical motor development (Adelson & Fraiberg, 1974; Blessing, McRimmon, & Williford, 1993; Buell, 1982, 1983; Cronin, 1992; Curry & Hatlen, 1988; Emes, 1985; Hatlen, 1990, 1996). Hence, students may experience problems in the areas of balance, strength, posture, gait, body image, fine-motor skills, and sensory development (Blessing et al., 1993; Buell, 1982; Cronin, 1992; Emes, 1985). Some authors claim that blindness is associated with a reduced motoric efficiency, which leads to a greater expenditure of energy, and fatigue (Buell, 1982; Kobberling, Jankowski, and Leger,
Pope, McGrain, and Arnhold (1986) studied sprinting and running patterns of athletes with severe visual impairments and discovered that the greater the visual impairment, the less mechanically efficient the sprinter is. Long distance runs that necessitate a sighted guide intensify stress because of the need to adjust to (the pace of) a new person (Sherrill, 1993). Jan, Sykanda, and Groenveld (1990) found that many students with severe visual impairments tend to walk “stiffly” and “hesitantly”. Curry and Hatlen (1988), Gorton and Gavron (1987), and Hanna (1986) claim that students with severe visual impairments may need a great extra instruction to address potential motoric deficiencies. Natalie, Lee, Ward, and Shephard (1985) and Hanna (1986) called attention to the necessity for students with severe visual impairments to exercise their bodies. Reduced stamina, poor posture, and habits such as rocking and twitching to release tension are the by-products of physical understimulation (Hanna, 1986).

One of the main goals of PE in British Columbia is “...to enable all students to enhance their quality of life through active living” (MOE, 1995b, p. 1). Active living is refers to a lifestyle that values physical activity (MOE, 1995b, p. 155). Participation in PE will enable students to acquire the knowledge, skills, and healthy attitudes essential to making physical activity a regular routine and developing an active, healthy lifestyle (Buell, 1993; MOE, 1995b; Williams, 1991). Among the benefits of PE classes are regular physical activity, an appreciation
and enjoyment of dance, games, gymnastics, and other activities (MOE, 1995b). Further, PE is an essential part of the education process and regular participation in PE engenders "...enhanced memory and learning, better concentration, and increased problem solving abilities" (MOE, 1995b, p. 1). Participation in PE also cultivates "...positive attitudes towards the self and others" (MOE, 1995b, p. 1).

Adapted PE

Block (1994), Sherrill (1993), Langendorfer (1985), and others have noted that quality (individualized) physical education is, in fact, quality adapted physical education. Langendorfer (1985) argues that individual differences require that teachers acknowledge that all students have different styles and rates of performance and learning. According to Langendorfer, the inclusion of students with disabilities is a natural extension of the educational acknowledgement of individual differences (Langendorfer, 1985). The presence of students with conspicuous differences compels teachers to consider those individual differences (Langendorfer, 1985). DePauw (1990) describes adapted PE as a multifaceted program of developmental activities, games, sports, and rhythms, suited to the interests, capacities, and limitations of students (with disabilities) who may not safely participate in the vigorous activities of the generic physical education curriculum. Block (1994) states that placement in regular PE classes does not mean that all partake in the same curriculum with the same resources. PE
programs for students with disabilities may need to include different goals and objectives (Block, 1994).

PE is widely recognised as being a more difficult subject area in which to affect inclusion. As a result of frank criticism of segregated schooling and the discriminatory implications of categorization and labeling, educational stakeholders and parents have eagerly and optimistically looked forward to the results of research evaluating the status of inclusive curriculum and programming. Several writers maintain that students with (severe) visual impairments are not accessing the benefits derived from PE classes when these classes are part of regular public school programs/curriculum (Curry & Hatlen, 1988). There is little conclusive evidence state that the practice of educational integration for the visually impaired is usually effective (Bishop, 1986 and 1990; Blessing et al., 1993; Ponchillia, 1995). According to Bishop (1986), "[t]he assumption that mainstreaming is naturally desirable and successful has been a philosophical bias unsupported by empirical research data" (p. 939). Bishop (1986) notes that the few existing studies lack empirical data and weak from a reliability, validity, and generalisability standpoint. Indeed, the available literature is extremely difficult to cross-reference and compare because, for example, researchers fail to clearly stipulate the sample subjects’ visual status (Bishop, 1986; Blessing et al., 1993). Similar measures of visual acuities may, in fact, manifest vastly different
functional levels of vision. Unfortunately, results are contradictory, and require more study (Bishop, 1986; Curry & Hatlen, 1988).

Studies that have addressed the status of integration in academic subject areas have generally neglected PE. Several of these studies have relevance to the identification of factors related to success in integrated programs. Bishop (1986) investigated the characteristics of success of students with VI in integrated settings, but her study did not include PE. Bishop (1986) identified factors that contribute to success. Among the ten most important variables she identified, half were pupil-related, four were school-related factors, and one was family related (Bishop, 1986). The most significant variables included students' social skills and motivation, accepting and flexible classroom teachers, competent Vision Teachers, supportive accepting family attitudes, and access to related community services (Bishop, 1986).

Watkinson and Bentz (1986) examined the barriers to the successful integration of students with mobility problems in elementary and secondary schools PE programs in Canada. A questionnaire was distributed to 1,107 teachers and 1,134 administrators and 71% of teachers and 73% of administrators completed the survey. Watkinson and Bentz (1986) reported that "...68% of the school administrators had students with physical disabilities placed in regular PE classes" (p. 5). Fewer than a quarter of the teachers stated that their students with physical disabilities participated in all the same PE activities as their
peers. More than half of teacher-respondents indicated that their students with physical disabilities attended regular PE classes and performed some of the same activities as students without disabilities (Watkinson & Bentz, 1986, p. 6). A tenth of school administrators reported these students were placed in a special PE class exclusively for students with disabilities (Watkinson & Bentz, 1986, p. 5). Almost one fourth of both respondent administrators and teachers commented that their students with physical disabilities attended academic classes or participated in other activities instead of attending PE (Watkinson & Bentz, 1986, p. 5). Moreover, over half the teachers reported that students with disabilities did not participate in extracurricular activity programs.

These findings support the contention that students with visual impairments in integrated settings do not have sufficient access to PE programs (Buell, 1982; Irving, 1993; Ponchillia, 1995; Sherrill, 1984). Irving’s (1993) concluded that in excess of 50% of ‘mainstreamed’ students with VI in Michigan experienced limited involvement in (public school) PE classes. Many students were allocated other activities during scheduled PE classes (Irving, 1993). Irving found that many students with VI spent PE time keeping score.

As a variety of researchers have indicated, insufficient participation in PE, coupled with parental overprotection and sedentary lifestyles, has predictable physical and emotional repercussions
(Ponchilla, 1995; Sherrill, 1993). Various studies indicate that students with visual impairments tend to adopt sedentary lifestyles and are less likely than sighted peers to experience suitable amounts of PE or to take part in organised sports after they graduate (Buell, 1982; DePauw, 1981; Jankowski & Evans, 1981; Nixon, 1988; Winnick, 1985). Most studies indicate that measures of physical condition are lower for persons with visual impairments than for the general student population (Dickinson et al., 1988; Jankowski & Evans, 1981; Kobberling, Jankowski, & Leger, 1991; Seelye, 1983; Shephard, 1990; Sherrill, 1993; Short & Winnick, 1986; Winnick, 1985). Some authors have discovered that students who have visual impairments record low levels of aerobic fitness, for example (Hopkins, et al., 1987; Jankowski & Evans, 1981; Seelye, 1983; Shindo, Kumagai, & Tanaka, 1987; Williams, Armstrong, Eves, & Faulkner, 1996).

Kobberling (1991) investigated the physical work capacities of randomly selected students with visual impairments and sighted students who were matched according to sex, age, and height. Kobberling discovered that measures of ‘habitual physical activity’ and ‘aerobic capacity’ were significantly greater for the sighted students. Short and Winnick (1986) administered the “Project Unique Physical Fitness Test” to both students with visual impairments and normally sighted students between 10-17 year old and reported that the physical fitness levels of adolescents with visual impairments were significantly
below that of normally sighted students. Their results also concurred with other research studies in that students with visual impairments recorded increased levels of obesity evidenced by their having greater skinfold thickness than their sighted counterparts (Hopkins, et al., 1987; Sherrill, 1993; Short & Winnick, 1986; Winnick, 1985). Short and Winnick (1986) reported that "the greatest discrepancy between blind and sighted youth was in throwing, running, and jumping" (p. 730). Buell's (1982) study also indicated great discrepancies in running and throwing activities. Short and Winnick (1986) found significant performance differences favouring subjects with normal sight on measures of strength (grip strength) and power strength (number of sit-ups performed in 60 seconds) (p. 731).

A number of researchers have also argued that the extent of visual impairment affects fitness scores. The more profound or severe the visual impairment, the lower the student's fitness (Hopkins, et al., 1987; Kobberling, 1991; Ponchillia, 1995; Sherrill, 1993). Studies conducted by Jankowski and Evans (1981), Kobberling (1991), Seelye (1983), and Short and Winnick (1986) uncovered poor cardiovascular performance among legally blind students as compared to peers with low vision and those with normal vision. Seelye (1983) administered the Kraus-Weber Minimum Physical Fitness Test of strength and flexibility to students attending a Detroit public school. Results of the very basic exercise test ranged widely among the three groups, with the
legally blind, partially sighted, and normally sighted groups achieving scores of forty-six percent, eighty percent, and ninety-five percent respectively. However, Short and Winnick (1986), found that while significant differences in fitness might exist between students who are blind and students with partial sight (Winnick, 1979), these differences apparently disappear when the definition of blindness is less precise or when the test activities do not require running.

Kobberling (1991) and Short and Winnick (1986) advise researchers to avoid comparing athletic performances of students with visual impairments sighted norms. Short and Winnick (1986) noted that norms for students with visual impairments should be established for the "Project Unique Fitness Test" battery (p. 731). Researchers offer a variety of reasons for the need for separate norms for students with visual impairments. Kobberling (1991) suggests that the speed at which a person may perform an activity may be inferior to that of sighted persons for safety-related reasons. In addition, Short and Winnick (1986) suggest that persons with a (severe) visual impairment have fewer opportunities for physical activity. Irving (1993) has identified the relationship between the degree of visual impairment and attitudes toward PE as an important factor. Irving (1993) found that students whose vision was too limited to allow them to run safely without help had more negative attitudes towards PE class than did those with sufficient vision to run independently. Sherrill (1993) argued
that the performance gap of students with visual impairments show greater gender differences than among sighted students. That is, boys with visual impairments significantly outperform girls with visual impairments. Improvement among boys has been shown between ages 6 to 17 years; girls plateau at about ages 13 or 14 (Sherrill, 1993). Dickinson et al. (1988) state that “[t]he findings concerning sex differences show similar patterns compared with the sighted population” (p. 39). Boys tend to be more interested in physical activities and participate more in and out of school, in a greater variety of activities (Dickinson et al., 1988). Short and Winnick (1986) conclude that “[a] recommendation to utilise separate norms for ...children [with visual impairments] does not imply that ...youngsters [with visual impairments] cannot achieve or surpass median levels of fitness obtained by their sighted peers” (p. 732). Similarly, this recommendation does not imply that teachers should necessarily consider lower fitness scores of the [student with a visual impairment] as “acceptable” (Short & Winnick, 1986).

In light of these findings, it is discouraging and ironic to reiterate that students with visual impairments, and students with severe visual impairments in particular may require the physiological benefits of rigorous physical activity more than sighted students. Students with visual impairments have fewer opportunities to participate in physical activities. Lee, Ward, and Shephard (1985), Palazesi (1986); Williams
et al., (1996), and Wyatt (1989) all noted a reduction in the opportunities to partake in aerobic activities. A great deal of evidence supports the benefits of regular aerobic exercise and shows that people with (severe) visual impairments can overcome many of the limitations described above by participating in exercise programs that are designed to include them (Blessing et al. 1993; DePauw, 1981; Kobberling, et al. 1991; Ponchillia, Powell, Felski, & Nicklawski, 1992; Williams, 1996). Sherrill (1993) points out that the effects of aerobic treadmill and bicycle ergometer training demonstrate that fitness levels significantly improve. George (1985) noted that blind college students engaging in a one-hour cardiovascular and muscular workout three times a week experienced significant cardiovascular and muscular fitness gains (Depauw, 1981; Hanna, 1986). George, Patton, Purdy and Pollock (1975) instructed ten legally blind college-age students (i.e., 18-26) three times per week for 14 weeks and recorded a significant increase in the students’ treadmill endurance time in addition to a significant reduction in their resting heart rates. Cardiovascular fitness of students with a visual impairment were similar to those of their sighted peers following four months of exercise training (Blessing et al., 1993; Lee, Ward, & Shephard, 1985). Williams et al. (1996) compared the peak VO₂, or peak oxygen intake, of a sample of 10 female sighted British students to that of a matched sample of 10 sighted girls and 10 girls with visual impairments. Peak VO₂ refers to the “highest oxygen
consumption elicited during an exercise test to exhaustion” (Armstrong & Welsman, 1994). Williams et al. (1996) found no significant
difference between the peak oxygen intake of the two groups (p. 495). Williams et al. (1996) attributed the high peak VO2 measures of the
girls with visual impairments to nature of their school PE program. The PE program provided each student with 40 minutes of PE (mainly
aerobic and dance-type activities), 40 minutes of swimming, and 80
minutes of games per week. In addition, these students accessed physiotherapy services and lifted weights. Kobberling et al. (1991)
concluded that “…blind and sighted adolescents apparently need approximately the same degree of physical training (i.e., a similar exercise program) to maintain desired levels of aerobic fitness” (p. 384).

While research indicates that students with (severe) VI can develop as a result of participation in well designed integrated PE classes, barriers to their successful integration continue to exist. The main barriers to integrating students with mobility problems in PE programs are relevant to the present study. Watkinson and Bentz (1986) consider these barriers to include “… facilities and equipment (e.g., architectural barriers to wheelchair travel), attitudes of teachers and administrators, professional preparation of teachers of PE, preparation of disabled students, availability of resources, availability of support personnel, and the nature of specific physical activities” (p. 10).
Watkinson and Bentz (1986) note that while the majority of teachers and administrators favored integration, their attitudes did not extend to PE. For example, almost half of the teachers indicated that placement in a special PE class would be more advantageous for students with disabilities.

Another important factor in successful integration is adequate professional training of teachers (Watkinson & Bentz, 1986). Head and Bishop (1990) in their survey of university preparatory programs found that few programs offered course work specifically dealing with (adapted) PE.

Watkinson and Bentz (1986) suggest that allowing students to develop pre-requisite skills through extra practice time would serve to enhance skill level. Teachers also need time to identify and or make the necessary adaptations to equipment or facilities and PE programs. In Australia, residential students at the Burwood Educational Center for Blind Children (Melbourne) receive training one day per month in a range of specific sport skills to facilitate their inclusion in physical education (Cronin, 1992).

Investigation of the levels of participation of integrated students with disabilities in specific activities revealed full participation in aquatics and children’s games (Watkinson & Bentz, 1986). Other activities such as football and skating and basketball and floor hockey exclude these students or limit their participation to a special 'non-
active’ role (Watkinson & Bentz, 1986). Sherrill (1993) argued that except for ball-handling activities, students with visual impairments can participate in all activities with few adaptations.

**Adapted PE Resource Material**

A number of studies indicate that teachers report feeling inadequately prepared to meet the demands posed by an inclusionary classroom (Aufsesser, 1981; Goodwin, 1986; Post & Roy, 1985; Watkinson & Bentz, 1986). Williams (1991) points out that “[r]esearch by Kuester (1991) indicates that those teachers with preservice or inservice and information do have more positive attitudes and actually try to involve all their students in physical education” (p. 162). Williams (1991) adds that “[m]any teachers are relying on someone who has taught a class with a child with a disability, or tried a variety of activities by trial and error” (p. 162).

Some educators promote adapted PE materials to facilitate the process of including students with disabilities (Goodwin, 1986). These materials become more important in middle or secondary schools (Williams, 1991). Williams (1991) states that “in later years, physical education begins to emphasize more complex skills- psychomotor as well as group dynamics. When a physical education teacher has 30 or so others, it becomes much more difficult to include a student who is disabled” (Williams, 1991, p. 160). Hill (1990) examined the “...extent to which 20 regular education teachers modified the mainstream
learning environment for children [with VI] attending public day schools in British Columbia” (Hill, 1990, p. 354). Hill (1990) explored “...nine areas of modification ...and it was found that the elementary regular education teachers tried to make modifications to a greater extent than did the secondary level regular education teachers” (p. 354).

The purpose of adapted PE manuals is to provide teachers of students with disabilities in their regular PE class some suggestions on how to change, adapt, set goals, and organize for learning and teaching, and be educationally satisfied with the results (Williams, 1991). There are a wide variety of strategies documented in manuals that can help ensure teachers experience success (Williams, 1991). The utility of the MTI-VI manual has yet to be assessed.

Teachers (both District Resource Teachers for students with Visual Impairments and PE Teachers) need to be aware of adapted PE resources (Andrews & Lupart, 1993; Goodwin, 1987; Williams, 1991). A number of researchers argue that unawareness of the availability of consults and of program materials poses a barrier to successful inclusion and blame the situation on a real lack of resources and/or on a lack of communication (Watkinson & Bentz, 1986). Watkinson and Bentz (1986) found that a quarter of all teachers “...did not know whether there were any consultants in PE” who could be of assistance (p. 16). Further, Watkinson and Bentz (1986) also discovered that
approximately half of the teachers possessed no program materials that could help them develop a suitable program for students with disabilities. Moreover, 26% of teachers were not cognizant of any program materials that could help them integrate these students (Watkinson & Bentz, 1986).

Admittedly, adapted PE materials cannot make all the difference, and must be introduced and utilized as part of a well-planned inclusion oriented PE program. Stein (1987) supports the practice of making “specific accommodations” in order to fully include a student with a disability. Yet, she warns against the proliferation of special education curricular materials and states that there is nothing particularly unique about these items. Adapted PE activities delineated in these materials are similar to activities found in sound, developmental, appropriate, and individualized PE programs (Stein, 1987). Moreover, Stein (1987) does not consider adapted PE to be a separate and independent discipline, divorced from general PE (Stein, 1987). This thesis will review how teachers perceive the usefulness of available resource materials as well as the kinds of manuals teachers would like to have available.

As Bishop (1986, 1990) and others have noted, there is a need for careful research in order to determine factors that promote full inclusion and the extent students with severe visual impairments participate in grades 7 to 12 PE classes. The next chapter describes the methodology of the study.
CHAPTER III
Methodology

Design

This study is exploratory and is intended to investigate the following research questions:

1. How do DRT-VIs and PE Teachers characterize or categorize the participation of their students with SVI?
2. Which activities or sports are the most difficult for teachers to adapt for students with SVI?
3. In terms of facilitating the inclusion of students with SVI in PE, how important are factors relating to:
   - the student with a SVI;
   - the family of a student with SVI;
   - the school environment;
   - the community; and
   - the features of adapted PE resource materials (e.g., manuals).
4. How helpful are the adapted resource manuals to DRT-VIs and PE Teachers?
5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?
Participants

Population for this study is a subpopulation of the twenty-three District Resource Teachers-Vision (DRT-VIs) in eight British Columbia Lower Mainland school districts. The survey was sent out to DRT-VIs' offices. Addresses were obtained from the database produced by the Provincial Resource Center for the Visually Impaired (PRCVI) and Special Education Technology-British Columbia (SET-BC). While all DRT-VI received a copy of the survey, with the exception of the researcher, only eleven of these DRT-VIs have worked with students with SVI in grades 7 to 12. These particular teachers were asked to complete a copy of the survey and to (photocopy and) distribute additional surveys to grade 7 to 12 PE Teachers and grade 7 classroom teachers in their districts with experience teaching students with SVI in PE classes. The total number of PE Teachers and classroom teachers with this type of experience in the eight school districts is unknown, but is likely less than 20. All participants were volunteers and their anonymity was guaranteed.

Procedures

Requests for permission to conduct research were sent out to appropriate administrative personnel in 12 Lower Mainland school districts. Vision Teachers from 3 of these districts contacted the researcher to indicate that they were not eligible to participate in the
study (i.e., they had not taught students with SVI in grades 7 to 12). A former DRT-VI in a participating school district contacted the researcher to indicate that he had been seconded to another position for too long to be eligible to complete a survey. An administrator from another district called to indicate that, due to funding constraints, there was no one to review the application to do research in that district. Hence, the application was rejected. Eight school districts ultimately participated in the study. Information was obtained from participants through the use of survey (see Appendix).

The survey was distributed with a letter of description and a self-addressed and stamped envelope. Additional copies of the survey for eligible PE Teachers were sent to DRT-VIs in all participating school districts. The letter outlined the purpose of the study and explained that the study focused on students who were braille and/or cane users (see Appendix). The letter also indicated that participation was voluntary. The letter requested that DRT-VI distribute copies of the survey, an explanatory letter, and stamped envelopes to PE Teachers with the experience working with students with SVI. The researcher was unable to determine the number of PE Teachers with experience instructing students with SVI prior to conducting the study. If additional surveys were required for PE Teachers, DRT-VIs were able to photocopy the survey and/or to request additional materials from the
researcher. Participants were requested to return the completed surveys within two weeks of receiving them.

**Survey**

The researcher polled professionals and experts in the fields of adapted PE and vision impairments and reviewed the relevant literature regarding the topic and the construct "inclusion". An appropriate research survey had to be developed, as there is no pre-published instrument (survey) that was designed to gather the type of information sought. The researcher designed a semi-structured survey to meet the research needs of the present study (the survey appears in its entirety in the Appendix). It should be noted that portions of the survey were modeled after Bishop's (1986) and Watkinson's and Bentz's (1986) surveys. These surveys were not designed to address PE and students with SVI.

Survey questions varied in order to gain the most comprehensive information. There were open and closed form items, scaled items (i.e., Likert scale), and checklists. Part A of the survey addressed biographical information regarding DRT-VIs and PE Teachers and their students with SVI in grades 7-12. Parts B and G addressed the extent to which students with SVI participate in PE programs. Questions similar to those posed by Watkinson and Bentz (1986) appear in this section. Parts C and G address the issue of those specific culturally normative activities that pose the most difficulties for Teachers for
purposes of inclusion. Part D included variables that could be analyzed by the Likert scale. These variables are recognized in the literature as indicators of success included placements. They were organized according to the categories proposed by Bishop (1986) study such as student characteristics, school factors, family attributes, and community factors (Bishop, 1986). The potential influence of gender on student participation was not addressed in the survey.

Part E included yes/no questions to address the issue of whether or not adapted PE resource materials, such as manuals, are meeting the needs of teachers. In section F, teachers who had received the MTI-VI manual were asked to evaluate its utility. Usefulness was ascertained according to Likert scaled questions and open-ended questions. In section G teachers were asked about the utility of the MTI-VI in adapting 8 groups of culturally normative PE activities.

Two DRT-VIs were requested to review and to suggest improvements to the survey. They made suggestions regarding the length of the survey, clarity of instructions, and the nature of the questions; those suggestions were ultimately incorporated into the survey.

Analysis

Raw data gathered were recorded and tabulated. The data analysis employed both descriptive and summative statistics. This was important because the sample did not derive from a normally
distributed population. Each section of the survey was analyzed separately, as the data were not comparable between sections. Results were generally rounded up to the first or second decimal place. Percentage figures may not add up to 100% due to this rounding. Statistical significance amongst the variables in section D was not found, as the study was exploratory and non-directional. Where appropriate, data are presented in hierarchical order based on the response of the DRT-VIs. The responses of PE Teachers follow in the same order, but not necessarily in the same hierarchical order.
CHAPTER IV

Results

Of the thirty-five surveys distributed, twenty-one were returned. Thirteen surveys were completed by DRT-VIs, six by PE Teachers, and one by a classroom teacher who also teaches PE. All eligible DRT-VIs in the eight school districts, with the exception of the author, completed a survey. The results obtained from the surveys completed by the PE Teachers and the classroom teacher were combined. One survey, completed by an Orientation and Mobility/Life Skills Specialist, was not included in the analysis.

General Biographical Information

i. DRT-VI Biographical Experience

DRT-VI participants have been teaching for an average of 14 years. The range of DRT-VI teaching experience is 17 years. All DRT-VIs spend 20 percent or less of their instructional time teaching PE classes. Over 80 per cent of the DRT-VIs have taught students with visual impairments in grade 7 and 8. Approximately 70 per cent of DRT-VIs have also taught students with visual impairments in grades 9 to 12.

DRT-VIs have taught an average of is approximately 13 (12.8) students with SVI. The number range of students with SVI taught by DRT-VIs is 44. Of the 167 students with SVI, slightly less than half were male.
ii. **PE Teacher Biographical Information**

PE Teacher participants have been teaching for an average of 16.5 years. The range of these teachers’ experience is 25. Over half of the PE Teachers had taught grade 7, over 70 percent grade 8, and over 85 per cent grades 9, 10, 11, and 12. Eighty-one per cent devote 81-100 per cent of their instructional time to teaching PE. Almost one third (28%) per cent teach PE 20 per cent or less and 14 per cent teach PE 41-60 percent. The range of students with SVI taught by PE Teachers is 4. One PE teacher was unable to estimate the exact number of students he/she had taught. Over seventy percent of the 11 students with SVI taught by PE Teachers were boys.

iii. **Students with SVI Biographical Information**

Twelve of the thirteen DRT-VIs answered the question “How many students with SVI use canes for mobility or use braille reading material?”. Approximately 47 percent of the students with SVI they served used a cane, and 51 per cent used braille. Four of the seven PE Teachers answered this question. They reported that approximately two thirds of their students used canes, and three quarters were reported as braille users. Please note that DRT-VIs and PE Teachers have not necessarily served the same students with SVI.

The study addressed the following questions:

1. How do DRT-VIs and PE Teachers characterize or categorize the participation of their students with SVI?
2. Which activities or sports are the most difficult for teachers to adapt for students with SVI?

3. In terms of facilitating the inclusion of students with SVI in PE, how important are factors relating to:
   - the student with a SVI;
   - the family of a student with SVI;
   - the school environment;
   - the community; and
   - the features of adapted PE resource materials (e.g., manuals)?

4. How helpful are the adapted resource manuals to DRT-VIs and PE Teachers?

5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?

Question #1. How do DRT-VIs and PE Teachers characterize or categorize the participation of their students with SVI?

Table 1 presents the percentage of students with SVI that were taught by the respondent groups characterized by each of the six categories of participation. Teachers were asked to indicate the number of students with SVI whose participation characterized by each appropriate category of participation. Teachers did not classify all of their students with SVI in the designated categories. The reason cited
was that the teachers did not have enough remembered information to assign some of their past students with SVI to specific categories.

Table 1

Percentage of Students with SVI Participation in PE, for each Participation Category by Teacher Group

<table>
<thead>
<tr>
<th>Participation Category</th>
<th>Teacher Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participates in regular PE classes in only some of the same activities as other students</td>
<td>DRT-VIs 49.3%</td>
</tr>
<tr>
<td>Participates in regular PE classes and does the same activities as other students</td>
<td>17.6</td>
</tr>
<tr>
<td>Participates in special PE classes for students with disabilities</td>
<td>16.2</td>
</tr>
<tr>
<td>Attends academic classes instead of PE classes</td>
<td>8.5</td>
</tr>
<tr>
<td>Attends other non-academic activities instead of PE</td>
<td>5.6</td>
</tr>
<tr>
<td>Attends regular PE classes, but does not participate</td>
<td>2.8</td>
</tr>
</tbody>
</table>
Table 1 indicates that the top three ranking categories are the same for both groups. For example, the DRT-VIs and PE Teachers categorized the majority of their students as “participating in regular PE classes in only some of the same activities as other students”. According to DRT-VIs, 14.1 percent of their students with SVI attended other academic and non-academic activities instead of PE classes.

**Question #2. Which activities or sports are the most difficult for teachers to adapt for students with SVI?**

Table 2 shows the responses pertaining to this question. Not all DRT-VI or PE Teachers provided three examples of the activities or sports he/she found most difficult to adapt to (actively) include students with SVI. Table 2 presents the percentage of times the particular activity or sport was cited out of the total responses to the question. Answers were grouped into three categories.

Ball sports, active, competitive team sports were the most difficult sports activities for both DRT-VI and PE Teachers to adapt. Volleyball was singled out as the most difficult sport to adapt to actively include students with SVI.

One PE teacher indicated that his/her student with SVI participated in special PE classes for students with disabilities, and reported that the SVI student had been placed in a transitional PE class-
a small class that includes ESL students. This teacher added that the pace of the class is appropriate for all students’ needs and that safety and level of participation were foremost concerns.

Likert-type survey question G. addressed activity-specific information regarding the nature of student with SVI participation. This question was scored according to the following categories: 1. Does not participate; 2. Participates as observer; 3. Participates in special non-active role; 4. Participates in special active role; 5. Participates fully. Twelve of the thirteen DRT-VIs and all of the PE Teachers completed this question. Participants were requested to omit any activity or activity group that was not offered in his/her regular PE program. Activity groupings included similar activities frequently included in PE programs. Table 3 presents the responses that reflect general responses to the whole groups of activities, and not individual constituent sports.

Question # 3. In terms of facilitating the inclusion of students with SVI in PE, how important are factors relating to:
  
  • the student with a SVI;
  
  • the family of a student with VI
  
  • the school environment
  
  • the community and
  
  • the features of adapted PE resource materials (e.g., manuals)?
Table 2
Percentage of Times that each Activity was Reported as “Most Difficult”
to Adapt by Teacher Group

<table>
<thead>
<tr>
<th>Activities “most difficult” to adapt:</th>
<th>% of time activity was cited/ Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs</td>
</tr>
<tr>
<td>1. Ball Sports or active, Competitive team sports (in general)</td>
<td>77.8%</td>
</tr>
<tr>
<td>And in particular:</td>
<td></td>
</tr>
<tr>
<td>Volleyball</td>
<td>22.2</td>
</tr>
<tr>
<td>Basketball</td>
<td>16.7</td>
</tr>
<tr>
<td>Floor Hockey</td>
<td>8.3</td>
</tr>
<tr>
<td>Softball</td>
<td>5.6</td>
</tr>
<tr>
<td>Soccer</td>
<td>5.6</td>
</tr>
<tr>
<td>Golf</td>
<td>2.8</td>
</tr>
<tr>
<td>Rugby</td>
<td>-</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>-</td>
</tr>
<tr>
<td>Handball</td>
<td>-</td>
</tr>
<tr>
<td>2. Racquet Games (in general)</td>
<td>16.7</td>
</tr>
<tr>
<td>And in particular:</td>
<td></td>
</tr>
<tr>
<td>Badminton</td>
<td>11.1</td>
</tr>
<tr>
<td>Tennis</td>
<td>2.8</td>
</tr>
<tr>
<td>3. Miscellaneous (in general)</td>
<td>5.6</td>
</tr>
<tr>
<td>And in particular:</td>
<td></td>
</tr>
<tr>
<td>Gymnastics</td>
<td>-</td>
</tr>
<tr>
<td>Orienteering</td>
<td>2.8</td>
</tr>
<tr>
<td>Tag-style games</td>
<td>2.8</td>
</tr>
</tbody>
</table>
### Table 3

Mean Level of Participation (and Rankings) for Students with SVI for each Activity Group by Teacher Group

<table>
<thead>
<tr>
<th>Activity Group</th>
<th>DRT-VIs</th>
<th>PE Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Likert Scores</td>
<td>% of sample omitting the activity group</td>
</tr>
<tr>
<td>Skiing</td>
<td>4.8 (1)</td>
<td>16.7%</td>
</tr>
<tr>
<td>Skating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track and field</td>
<td>4.5 (2)</td>
<td>-</td>
</tr>
<tr>
<td>Aquatics</td>
<td>4.4 (3)</td>
<td>23.1</td>
</tr>
<tr>
<td>Dance</td>
<td>4.3 (4)</td>
<td>8.3</td>
</tr>
<tr>
<td>Gymnastics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight lifting</td>
<td>4.3 (5)</td>
<td>8.3</td>
</tr>
<tr>
<td>Wrestling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basketball</td>
<td>3.6 (6)</td>
<td>8.3</td>
</tr>
<tr>
<td>Volleyball</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soccer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Football</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climbing activities</td>
<td>3.1 (7)</td>
<td>41.7</td>
</tr>
<tr>
<td>Tennis</td>
<td>3.0 (8)</td>
<td>16.7</td>
</tr>
<tr>
<td>Badminton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softball</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor hockey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handball</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In addressing question #3, the importance teachers ascribed to variables related to five categories: i.e., regarding a student with a SVI (Table 4); his/her family (Table 5); school environment (Table 6); and community (Table 7); and features of resource materials (Table 8) was addressed by way of Likert scales.

Table 4 presents variables that relate to student (with SVI) variables in enabling successful inclusion. This question was scored according to the following categories: 1. Not important; 2. Minimally important; 3. Somewhat important; 4. Important; 5. Very important.

According to the data, DRT-VIs rate the “ability to follow directions” as the most important of the listed student variables in successful integration. Contrastingly, PE Teachers rate “the presence of additional disabilities” as the most important student factor.

Table 5 presents variables that relate to families of students with SVI in enabling successful inclusion of students with SVI in PE. This question was scored according to the following categories: 1. Not important; 2. Minimally important; 3. Somewhat important; 4. Important; 5. Very important. The data indicates that both groups rate “realistic expectations” as the most important variable regarding the student’ family.

Table 6 presents variables that relate to school environment in enabling successful inclusion in PE. This question was scored according
to the following categories: 1. Not important; 2. Minimally important; 3. Somewhat important; 4. Important; 5. Very important.

Table 4

Mean Importance Ratings (and Rankings) of Student Variables Related to Enabling Successful Inclusion by Teacher Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs</td>
</tr>
<tr>
<td>Ability to follow directions</td>
<td>4.23 (1)</td>
</tr>
<tr>
<td>Motivation (or “inner drive”)</td>
<td>4.15 (2)</td>
</tr>
<tr>
<td>Ability to care for personal needs</td>
<td>4.07 (3)</td>
</tr>
<tr>
<td>Adaptability or flexibility</td>
<td>3.92 (4)</td>
</tr>
<tr>
<td>Age appropriate social skills (e.g., ability to interact with peers)</td>
<td>3.92 (5)</td>
</tr>
<tr>
<td>Age-appropriate play or leisure skills</td>
<td>3.91 (6)</td>
</tr>
<tr>
<td>Travel skills</td>
<td>3.53 (7)</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>3.23 (8)</td>
</tr>
<tr>
<td>Amount of vision</td>
<td>3.08 (9)</td>
</tr>
<tr>
<td>Sport experience/background</td>
<td>3.00 (10)</td>
</tr>
<tr>
<td>Presence of additional disabilities</td>
<td>2.53 (11)</td>
</tr>
</tbody>
</table>
Table 5

Mean Importance Ratings (and Rankings) of Family Variables Related to Enabling Successful Inclusion by Teacher Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs</td>
</tr>
<tr>
<td>Realistic expectations</td>
<td>4.30 (1)</td>
</tr>
<tr>
<td>Accepting family attitudes</td>
<td>4.23 (2)</td>
</tr>
<tr>
<td>Interest in school activities</td>
<td>3.92 (3)</td>
</tr>
<tr>
<td>Cooperation in problem solving</td>
<td>3.76 (4)</td>
</tr>
</tbody>
</table>

Both teacher groups reported that an “accepting and flexible PE teacher” was the most important factor in the successful inclusion of students with SVI in PE classes. With respect to the factor of the “availability of DRT-VIs for students with visual impairments”, a PE teacher stated that “[t]his is my third year teaching this student [with a SVI] and at no time has anyone offered any assistance or education for her in a PE setting”. The variable “adapted PE manuals” was included under School Environment because of their potential importance to the school environment.
Table 6
Mean Importance Ratings (and Rankings) of School Environment

Variables Related to Enabling Successful Inclusion by Teacher Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs</td>
</tr>
<tr>
<td>Accepting and Flexible PE Teacher</td>
<td>4.66 (1)</td>
</tr>
<tr>
<td>Availability of District Resource Teacher(s) for Students with Visual Impairments</td>
<td>4.41 (2)</td>
</tr>
<tr>
<td>Informal brainstorming/ problem solving with teacher colleagues</td>
<td>4.23 (3)</td>
</tr>
<tr>
<td>Supportive School Administrator</td>
<td>4.16 (4)</td>
</tr>
<tr>
<td>Peer acceptance and interaction</td>
<td>4.15 (5)</td>
</tr>
<tr>
<td>Adequate special/ adapted sports equipment</td>
<td>3.61 (6)</td>
</tr>
<tr>
<td>Inservices from adapted PE specialists</td>
<td>3.61 (6)</td>
</tr>
<tr>
<td>Absence of facility and architectural barriers</td>
<td>3.53 (7)</td>
</tr>
<tr>
<td>Adapted PE manuals</td>
<td>3.46 (8)</td>
</tr>
</tbody>
</table>

Table 7 presents variables that relate to community in facilitating inclusion in PE. This question was scored according to the following categories: 1. Not important; 2. Minimally important; 3. Somewhat important; 4. Important; 5. Very important. Both teacher groups indicated that “opportunities for students with SVI to participate in local
peer sport activities was the most important factor in facilitating inclusion.

Table 7
Mean Importance Ratings (and Rankings) of Community Variables Related to Enabling Successful Inclusion by Teacher Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
<th>DRT-VIs</th>
<th>PE Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities for students with severe visual impairments to participate in local peer sport activities</td>
<td></td>
<td>4.11</td>
<td>3.57 (1)</td>
</tr>
<tr>
<td>Availability of a variety of accepting recreational resources (e.g., parks, community centers, etc.)</td>
<td></td>
<td>4.07</td>
<td>2.85 (3)</td>
</tr>
<tr>
<td>Access to related services (e.g., BC Blind Sports Assoc., BC Blind Skiers Assoc., etc.)</td>
<td></td>
<td>3.61</td>
<td>3.28 (2)</td>
</tr>
</tbody>
</table>

Table 8 presents variables that relate to features of adapted resource materials (e.g., adapted PE manuals) in facilitating inclusion in PE. This question was scored according to the following categories: 1. Not important; 2. Minimally important; 3. Somewhat important; 4.
Important; 5. Very important. Results highlight the importance teachers ascribed to activity-specific help in adapted resource materials.

Table 8
Mean Importance Ratings (and Rankings) of Adapted PE Resource Material Variables Related to Enabling Successful Inclusion by Teacher Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs</td>
</tr>
<tr>
<td>Activity specific help (i.e., how to modify specific rules or add audible cues, etc.)</td>
<td>4.30 (1)</td>
</tr>
<tr>
<td>Safety issues</td>
<td>4.15 (2)</td>
</tr>
<tr>
<td>Suggestions for equipment modifications</td>
<td>3.92 (3)</td>
</tr>
<tr>
<td>Anecdotal success stories</td>
<td>3.23 (4)</td>
</tr>
</tbody>
</table>

Eleven variables were selected by DRT-VIs as the most important facilitators of inclusion. Table 9 shows the Likert scores of these variables for DRT-VIs and PE Teachers.

The 11 top-rated variables according to DRT-VIs were collapsed into their respective categories. Table 10 presents the percentage of the top 11 variables identified by DRT-VIs per variable category.

Categorizing these variables underscores the importance assigned to the school environment variables.
Table 9

The Most Important 11 Variables in Enabling Successful Inclusion According to DRT-VIs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting and flexible PE teacher</td>
<td>4.66 (1)</td>
</tr>
<tr>
<td>Availability of District Resource Teacher(s) for Students with Visual Impairments</td>
<td>4.41 (2)</td>
</tr>
<tr>
<td>Realistic expectations</td>
<td>4.30 (3)</td>
</tr>
<tr>
<td>Activity specific help (i.e., how to modify specific rules or add audible cues, etc.)</td>
<td>4.30 (3)</td>
</tr>
<tr>
<td>Informal brainstorming/problem solving with teacher colleagues</td>
<td>4.23 (4)</td>
</tr>
<tr>
<td>Ability to follow directions</td>
<td>4.23 (4)</td>
</tr>
<tr>
<td>Accepting family attitudes</td>
<td>4.23 (4)</td>
</tr>
<tr>
<td>Supportive school administrator</td>
<td>4.16 (5)</td>
</tr>
<tr>
<td>Motivation (or &quot;inner drive&quot;)</td>
<td>4.15 (6)</td>
</tr>
<tr>
<td>Peer acceptance and interaction</td>
<td>4.15 (6)</td>
</tr>
<tr>
<td>Safety issues</td>
<td>4.15 (6)</td>
</tr>
</tbody>
</table>
Table 10

Percentage of Top 11 Variables in each Variable Category According to DRT-VIs

<table>
<thead>
<tr>
<th>Variable Category</th>
<th>% of Top 11 variables in each Variable Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Environment</td>
<td>45.5%</td>
</tr>
<tr>
<td>Students with SVI</td>
<td>18.2</td>
</tr>
<tr>
<td>Family of Student with a SVI</td>
<td>18.2</td>
</tr>
<tr>
<td>Features of Resource Materials (such as adapted PE manuals and teacher guides)</td>
<td>18.2</td>
</tr>
<tr>
<td>Community</td>
<td>0</td>
</tr>
</tbody>
</table>

PE Teachers selected ten variables as the most important facilitators of inclusion. Table 11 shows the Likert scores of these variables for PE Teachers and DRT-VIs. Table 11 also emphasizes differences between DRT-VI and PE Teacher scores for each variable.

The 10 top-rated variables according to PE Teachers were amalgamated into their respective categories. Table 12 presents the percentage of the top 10 variables identified by PE Teachers per variable category. Organizing these variables in this fashion highlights the importance ascribed to school environment variables.
Table 11

The Most Important 11 Variables in Enabling Successful Inclusion

According to PE Teachers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean Likert Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting and flexible PE teacher</td>
<td>4.92 (1)</td>
</tr>
<tr>
<td>Activity specific help (i.e., how to modify specific rules or add audible cues, etc.)</td>
<td>4.85 (2)</td>
</tr>
<tr>
<td>Safety issues</td>
<td>4.71 (3)</td>
</tr>
<tr>
<td>Suggestions for equipment modifications</td>
<td>4.71 (3)</td>
</tr>
<tr>
<td>Peer acceptance and interaction</td>
<td>4.66 (4)</td>
</tr>
<tr>
<td>Presence of additional disabilities</td>
<td>4.57 (5)</td>
</tr>
<tr>
<td>Realistic expectations</td>
<td>4.57 (5)</td>
</tr>
<tr>
<td>Age appropriate social skills</td>
<td>4.42 (6)</td>
</tr>
<tr>
<td>Adapted PE manuals</td>
<td>4.42 (6)</td>
</tr>
<tr>
<td>Supportive school administrator</td>
<td>4.42 (6)</td>
</tr>
</tbody>
</table>

Question #4. How helpful are the adapted resource manuals to DRT-VIs and PE Teachers?

Table 13 presents responses to the question, “Do you have adapted PE resource materials (e.g., manuals) conveniently available to you?”. A PE Teacher reported a lack of awareness of the existence of adapted PE
materials. Another PE Teacher indicated that more and easier access to adapted PE materials would be desirable.

Teachers who responded yes to question #4 (i.e., 9 DRT-VIs and 3 PE Teachers) were asked about the content of resource material available to them according to three criteria. Table 14 presents their responses. One PE teacher did not respond to the last criterion. Most DRT-VIs and PE Teachers indicated that adapted resource materials provided sufficient safety information to make activities safe for students with SVI.

Table 12

Percentage of Top 10 Variables in each Variable Category According to PE Teachers

<table>
<thead>
<tr>
<th>Variable Category</th>
<th>% of Top 10 Variables in each Variable Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Environment</td>
<td>40%</td>
</tr>
<tr>
<td>Features of Resource Materials (such as adapted PE manuals and teacher guides)</td>
<td>30</td>
</tr>
<tr>
<td>Students with SVI</td>
<td>20</td>
</tr>
<tr>
<td>Family of Student with a SVI</td>
<td>10</td>
</tr>
<tr>
<td>Community</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 13
Availability of Adapted PE Resource Materials by Teacher Group

<table>
<thead>
<tr>
<th>Availability of adapted PE materials</th>
<th>Teacher Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VI (N= 13)</td>
</tr>
<tr>
<td>Yes</td>
<td>69%</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
</tr>
<tr>
<td>Do not know</td>
<td>8</td>
</tr>
</tbody>
</table>

Question #5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?

One of the aims of this study was to conduct a brief evaluation of the "Moving to Inclusion Manual for Students with Visual Impairments" (MTI-VI). Teachers were asked if they had received the MTI-VI and to answer questions pertaining to it. Only six of the thirteen DRT-VIs had received the MTI-VI and could respond to the questions. Only one of the seven PE Teachers had received the MTI-VI. One of the DRT-VIs was aware of the MTI-VI, but had not used it sufficiently to respond. The questions were asked using the Likert scaled items. Responses were scored according to the following categories: 1. Strongly disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly agree.
Table 15 shows the results of this analysis. Data suggests that DRT-VIs were generally undecided as the MTI-VI’s value.

Table 14

Evaluation of Available Adapted PE Resource Materials by Teacher Group

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Teacher Group</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs (N=9)</td>
<td>PE Teachers (N=3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the adapted PE literature available to you:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide enough safety tips to make activities safe for students with a</td>
<td>Yes</td>
<td>No</td>
<td>Do not</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>77%</td>
<td>22%</td>
<td>67%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Include useful anecdotal success stories of inclusion?</td>
<td>22</td>
<td>44</td>
<td>67</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Provide enough activity-specific help?</td>
<td>44</td>
<td>56</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>
Two open ended questions (F 3. and F 4.) asked participants to further comment on the value of the manual. In response to the question “What do you like the most about the MTI-VI?”, participants characterized the manual in different ways. Five DRT-VIs responded to this question. A DRT-VI described it as being “very comprehensive” and another DRT-VI called it a “glossary of modifications”. One DRT-VI described the manual’s “philosophy” as promoting inclusion of all students in PE classes and recreational activities. Another DRT-VI commented that it was beneficial to have a recent resource. A DRT-VI noted that he/she did not think the manual was “very good”.

The second open-ended question, “What do you like the least about the MTI-VI manual” garnered DRT-VIs comments such as the manual is “too vague” and “states the obvious”; “[teachers] need more ideas, more depth”. One DRT-VI noted a “lack of information on adapting ball games (e.g., softball, basketball) for the totally blind” while another indicated that “some of the activities that are not recommended [in the manual] for the totally blind have been done successfully”. A DRT-VI stated a dislike for the use of the term “partially sighted” in the manual.

The one PE teacher who had received the MTI-VI indicated that, while the manual had three useful activities, it was “chock-full of almost useless information, activities, and suggestions as pertained to my visually impaired (blind) student”. 
Table 15

Mean Evaluation Ratings of the MTI-VI by Teacher Group

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Mean Likert Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRT-VIs PE Teachers</td>
</tr>
<tr>
<td>The MTI-VI has helped you provide an appropriate PE program for your student(s) with severe visual impairments.</td>
<td>2.91 1</td>
</tr>
<tr>
<td>The MTI-VI is more useful to you in providing an appropriate PE program for students with less severe visual impairments.</td>
<td>3.16 4</td>
</tr>
</tbody>
</table>

With reference to specific activity groups, Table 16 reports the percentage of DRT-VIs and PE Teachers who found the useful and the percentage of teachers who omitted the activity group (i.e., do not include the activity group in their PE programs).

Recall that six of the nine DRT-VIs who had adapted PE resource materials (e.g., manuals) conveniently available to them, had received the MTI-VI and could respond to this question. One of the three PE Teachers, who had adapted PE resource materials, had received the MTI-VI and could respond.

The results of this study will be described in the next section.
Table 16

Activity-Specific Evaluation of the MTI-VI by Teacher Group

<table>
<thead>
<tr>
<th>Activity Group</th>
<th>Results</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of DRT-VIs who stated the MTI-VI was useful</td>
<td>% of sample omitting the activity group</td>
<td>% of PE Teachers who stated that the MTI-VI was useful</td>
<td>% of sample omitting the activity group</td>
</tr>
<tr>
<td>Track and field</td>
<td>66.7%</td>
<td>-</td>
<td>-</td>
<td>28.6%</td>
</tr>
<tr>
<td>Aquatics</td>
<td>40.0</td>
<td>23.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Skiing</td>
<td>33.3</td>
<td>16.7</td>
<td>0</td>
<td>57.1</td>
</tr>
<tr>
<td>Skating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight lifting</td>
<td>16.7</td>
<td>8.3</td>
<td>-</td>
<td>28.6</td>
</tr>
<tr>
<td>Wrestling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basketball</td>
<td>16.7</td>
<td>8.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Volleyball</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soccer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bowling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Football</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tennis</td>
<td>16.7</td>
<td>16.7</td>
<td>0</td>
<td>14.3</td>
</tr>
<tr>
<td>Badminton</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softball</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor hockey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handball</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dance</td>
<td>0</td>
<td>8.3</td>
<td>-</td>
<td>14.3</td>
</tr>
<tr>
<td>Gymnastics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climbing activities</td>
<td>0</td>
<td>41.7</td>
<td>-</td>
<td>71.4</td>
</tr>
<tr>
<td></td>
<td></td>
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</table>
CHAPTER V
Discussion and Conclusions

Discussion

This study is an exploration of the following research questions:

1. How do District Resource Teachers- Vision and Physical Education Teachers characterize or categorize the participation of their students with a severe visual impairment?

2. Which activities or sports are the most difficult for teachers to adapt for students with a severe visual impairment?

3. In terms of facilitating the inclusion of students with a severe visual impairment in Physical Education, how important are factors relating to
   - the student with a severe visual impairment
   - the family of a student with a severe visual impairment
   - the school environment
   - the community and
   - the features of adapted Physical Education resource materials (e.g., manuals)

4. How helpful are the adapted resource manuals to District Resource Teachers- Vision and Physical Education Teachers?

5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?

Numerous researchers have argued that restricted access to Physical Education classes results in low fitness levels for students with
visual impairments. This is particularly true for students with a severe visual impairment. In fact, the research indicates that students with a severe visual impairment often have lower fitness levels than their partially sighted peers. The results of this study are in agreement with previous studies that link (severe) disabilities with restricted levels of participation in Physical Education (Watkinson & Bentz, 1986). The need to improve existing Physical Education services and access to quality physical activity for students with (S)VI has been proposed by several writers (Irving, 1993; Ponchillia, 1995). The present study clearly demonstrates that access to Physical Education programs can be established in inclusive schools. The study also identified areas that require attention and modification in Physical Education programming.

Participants indicated that, while most students with a severe visual impairment attend regular Physical Education classes, they only participate in some of the same activities as other students. In addition, District Resource Teachers- Vision reported that 16.9% of their students with a severe visual impairment do not actively participate in and/or do not attend Physical Education classes of any kind. Students with a severe visual impairment often lack access to community based sport, a fact that serves to heighten the importance of access to physical activity in school.

Watkinson and Bentz (1986) also found that there are barriers to integration due to the nature of a particular activity. Participants
identified a variety of culturally normative sports activities as presenting the most difficulties in terms of actively and meaningfully including students with a severe visual impairment. Competitive, team sports that involve balls and rackets are most frequently cited as the most challenging activities to adapt. It is not surprising that teachers reported low levels of participation for these types of activities. Both District Resource Teachers- Vision and Physical Education Teachers cited volleyball and basketball as the most challenging to modify.

Watkinson and Bentz (1986) note that every student with a disability is unique and his/her needs should be evaluated on an individual basis. Results of the present study suggest that the significant number of students with a severe visual impairment who “participate in regular Physical Education classes in only some of the same activities as other students” can be involved in a “special active role”. The “special active role” can be evaluated in terms of its meaningfulness and value as a physical activity. For example, does the “special active role” entail vigorous activity and does it have a skill component (Watkinson & Bentz, 1986). Watkinson and Bentz (1986) noted the need to delineate the potential “special active roles” in culturally normative activities and establish a method of appraising them.
It should be noted that many activities require substantial modifications that may affect the integrity of the activity (Canadian Council for the Blind, 1993). Possible reasons include the following:

- activities often encourage rapid movements across large spaces;
- peers and teachers may be resistant to significantly altering the activity (e.g., the rules, goals, and equipment in basketball), in order to include the student with a severe visual impairment;
- may involve equipment not easily adapted for students with a severe visual impairment;
- adapted Physical Education resource materials may not be available or are not being utilized effectively.

Suggestions regarding the development of parallel activities and lead-up skill development are important for teachers.

Limited participation of students with a severe visual impairment is also linked to variables related to the student with a severe visual impairment, the student’s family, school environment, and community, and adapted PE resource materials. Evaluated on an individual basis, some of these variables, such as the student’s ability to follow directions or realistic family expectations may act as barriers or facilitating factors in the inclusionary process.

The present study is in agreement with Bishop’s (1986) findings that inclusion for students with visual impairments is a “collaborative process” (Bishop, 1986). There is a shared responsibility among the
student with a severe visual impairment, his/her family, and his/her school environment. The results of the study concurred with Bishop (1986) who argued that the influence of the community is less crucial than the responsibilities of all those directly connected with the inclusionary process (Bishop, 1986). Community organizations such as British Columbia Blind Sports contribute their expertise to the creation of and inserviceing around adapted resource materials (e.g., the Moving to Inclusion Manual for Students with a Visual Impairment).

The results show that the school environment is a powerful influence on the process of inclusion. Both District Resource Teachers-Vision and Physical Education Teachers consider an "accepting and flexible Physical Education Teacher" as the most important variable in enabling the inclusion of a student with a severe visual impairment. Bishop (1986) also found that accepting and flexible teachers play a significant role. District Resource Teachers-Vision rated the availability of well-prepared District Resource Teachers-Vision for students with a severe visual impairment as the second most important variable. Physical Education Teachers rated this variable as important, yet not all Physical Education Teacher respondents had accessed these resource personnel.

Attitudes are important to the success of inclusion (as evidenced in the number of the top-ranked [in importance] variables that included the term "acceptance"). For example, both teacher groups in the
present study identified a “flexible and accepting Physical Education Teacher” as the most important variable in facilitating inclusion in Physical Education. The respondents rated “peer acceptance and interaction” among the top ten most important variables. According to Bishop’s (1986) study, the necessity for social “interchange” between a student with a visual impairment and his/her peers is an especially crucial component of successful integration. The importance of attitudes may suggest the need for additional intervention to change negative attitudes towards integration. Demonstrations, inservices, conferences, and workshops can foster a more welcoming and amenable environment in regular Physical Education classes for students with (S)VI. These various interventions should be a component of pre-service teacher education (Bishop, 1986; Williams, 1991).

District Resource Teachers- Vision and Physical Education Teachers considered student variables to be important. The present study recorded highly ranked student variables which included “age appropriate [student] social skills”, students’ “ability to follow directions”, “motivation (or “inner drive”), and “ability to care for personal needs” as factors in successful inclusion. Physical Education Teachers rated “the presence of additional disabilities” as the most significant student variable accounting for a lack of inclusion in regular Physical Education classes. Insufficient awareness of the importance of travel training, or Orientation and Mobility, for students with a severe
visual impairment was also observed. A number of these student variables, such as "age-appropriate social skills" and the "ability to follow directions", relate to skills that can be taught. Many of these skills may be regarded as relating to the student's visual impairment and requiring the specialized expertise and services of a DRT-VI. The DRT-VI must formulate individualized methodologies for teaching these skills (Bishop, 1986). An early start to this specialized intervention helps to guard against delays in skill development (Blessing, et al., 1993; Curry & Hatlen, 1988; Hatlen, 1990, 1996; Rogow, 1988).

The significance ascribed to qualified Physical Education Teachers and District Resource Teachers- Vision underscores the importance of the competency of these professionals (Bishop, 1986; Watkinson & Bentz, 1986). Ensuring that these teachers gain the necessary expertise in terms of their ability to promote and effect inclusion is a serious obligation of teacher preparatory programs (Bishop, 1986; Watkinson & Bentz, 1986). The literature review revealed, however, that few, if any, DRT-VI university training programs include courses on adapted Physical Education (Head & Bishop, 1990).

Since the present study was concerned with assessing the utility of adapted resource materials in the inclusionary process, respondents were also asked to assess the "features of adapted Physical Education resource materials". The Moving to Inclusion Manual for Students with a Visual Impairment manual has been revised at least once without
undergoing a comprehensive evaluation of its utility by teacher users. Whereas District Resource Teachers- Vision considered adapted Physical Education manuals and features of these adapted resources among the (11) most important components of successful inclusion, the results indicate that these resources and particular features of these resources (e.g., activity specific help) were more important to Physical Education Teachers than to District Resource Teachers- Vision in facilitating inclusion of students with a severe visual impairment. Perhaps this result reflects the fact that, in practice, the primary responsibility of including students with a severe visual impairment in Physical Education lies with the Physical Education Teachers.

A paucity of informative and useful resource material is also a barrier to successful inclusion. Watkinson and Bentz (1986) also identified increased awareness of the availability of resources as important to the inclusion process. Despite the importance ascribed to adapted resource materials, results of the present study indicate that approximately one third of District Resource Teachers- Vision and more than half of Physical Education Teachers are unaware of the availability of adapted Physical Education resource materials (e.g., manuals). In general, most of the respondents in the present study who had these resource materials remarked that the adapted Physical Education literature available to them did provide enough safety tips to make activities safe for students with a severe visual impairment.
There was some speculation amongst members of the Vision Teaching community that the addition of anecdotal success stories to the Moving to Inclusion Manual for Students with a Visual Impairment manual might help teachers put information to better use. Most District Resource Teachers- Vision and Physical Education Teachers indicated that the feature of anecdotal success stories was the least important feature of adapted Physical Education resource materials. Study data suggests that further research is necessary.

Most District Resource Teachers- Vision and half of the Physical Education Teachers felt that the adapted Physical Education resource materials do not provide sufficient activity-specific help. District Resource Teachers- Vision regarded the Moving to Inclusion Manual for Students with a Visual Impairment as ineffectual in facilitating inclusion of students with a severe visual impairment in dance, gymnastics, and climbing activities. However, approximately a third of District Resource Teachers- Vision considered the Moving to Inclusion Manual for Students with a Visual Impairment to be useful in adapting skiing and skating and aquatics, while two-thirds of District Resource Teachers- Vision found the manual useful in the adaptation of track and field. These results may also reflect the level of difficulty associated with adapting the various activities.

Variability in rates of participation in various activities suggests that there are inclusionary strategies that work. Watkinson and Bentz
(1986) also noted a wide range in the degree of participation across situations. It may be useful to collect tips, strategies, and suggestions from successful teachers and incorporate these into future revisions of the manual. It seems apparent from the results of the survey, that students with a severe visual impairment experience low levels of participation in those sports that require the most adaptation. Critiques of the Moving to Inclusion Manual for Students with a Visual Impairment reflect frustration that teachers experience when trying to include students with a severe visual impairment in team sports. Resource material should address these sports in more depth.

Suggestions for Further Research

A number of findings from the present study suggest the need for further investigation. The present study targeted a very specific degree of visual impairment and grades 7 to 12 Physical Education classes. There is a need for more research on the status of students with visual impairments in grades K to 12 Physical Education in general. Perhaps longitudinal research and comparative studies of levels of participation in elementary grades would be useful. The impact of gender on levels of participation, the status of students with (S)VI in extracurricular and community sport activities, and the (adapted Physical Education) educational background of District Resource Teachers- Vision and Physical Education Teachers would also be of interest. An investigation
into the relationship between Orientation and Mobility skill development and Physical Education (motor) skill development may also generate interesting results. Data from the present study suggest the need for a comprehensive follow-up study of the Moving to Inclusion Manual for Students with a Visual Impairment.

**Limitations of the Study**

The relatively low incidence of students with a severe visual impairment may be regarded as a limitation of this study. A larger study with more participants the inclusion of those with more vision and multiple disabilities might also have been useful in identifying additional barriers and/or facilitating factors of the inclusion process.

The whereabouts of Physical Education Teachers with experience teaching students with severe visual impairments in grades 7 to 12 is unknown. The researcher was dependent on District Resource Teachers - Vision to distribute the surveys to Physical Education Teachers with the necessary teaching experience. Due to the small size of the Physical Education Teacher sample, this aspect of the study may be considered a pilot study.
Conclusions

This study has examined the following research questions:

1. How do District Resource Teachers- Vision and Physical Education Teachers characterize or categorize the participation of their students with a severe visual impairment?

2. Which activities or sports are the most difficult for teachers to adapt for students with a severe visual impairment?

3. In terms of facilitating the inclusion of students with a severe visual impairment in Physical Education, how important are factors relating to:
   - the student with a severe visual impairment;
   - the family of a student with severe visual impairment;
   - the school environment;
   - the community; and
   - the features of adapted Physical Education resource materials (e.g., manuals).

4. How helpful are the adapted resource manuals to District Resource Teachers- Vision and Physical Education Teachers?

5. Is the Moving to Inclusion Manual for Students with Visual Impairments (MTI-VI) useful? Why or why not?

Findings call attention to the need for continued investigation into the status of students with (severe) visual impairments in Physical
Education programs. Particular sports activities may pose unusual challenges to inclusion. The results of the present study underscore the necessity of developing and sharing teacher expertise and adapted Physical Education resources in order to fully include students with visual impairments in Physical Education programs.
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Ponchillia, S. V., Powell, L. I., Felski, L. A. & Nicklawski, M.


APPENDIX: Sample of Survey

**The Inclusion of Students with Severe Visually Impairments in Grades Seven to Twelve Physical Education Classes (Lower Mainland)**

A. Please check the position that you currently hold
   ___District Resource Teacher- Vision  ___PE Teacher  ___Other (Specify: ____________)

1. How many years have you been teaching? ______

2. Please check all grades that you have taught:
   _7_  _8_  _9_  _10_  _11_  _12_

3. What percentage of your instructional time is spent teaching PE classes (Please circle your answer)?
   a. 20% or less
   b. 21% - 40%
   c. 41% - 60%
   d. 61% - 80%
   e. 81% - 100%

4. How many students with severe visual impairments have you taught?
   Boys: ______
   Girls: ______

5. How many of these students:
   ______ use canes for mobility
   ______ do not know
   ______ use braille reading material
   ______ do not know

B. Indicate the number of students with a severe visual impairment (referred to in section A) that fit into each mutually exclusive category.

<table>
<thead>
<tr>
<th>Number</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>______</td>
<td>1. Participates in regular PE classes and does the same activities as other students</td>
</tr>
<tr>
<td>______</td>
<td>2. Participates in regular PE classes in only some of the same activities as other students</td>
</tr>
<tr>
<td>______</td>
<td>3. Participates in special PE classes for students with disabilities</td>
</tr>
<tr>
<td>______</td>
<td>4. Attends regular PE classes, but does not participate</td>
</tr>
<tr>
<td>______</td>
<td>5. Attends academic classes instead of PE classes</td>
</tr>
<tr>
<td>______</td>
<td>6. Attends other non-academic activities instead of PE</td>
</tr>
</tbody>
</table>

C. Which three activities or sports are the most difficult for you to adapt to actively include students with severe visual impairments?

1. ______________________

2. ______________________

3. ______________________
D. How IMPORTANT do you regard the following in enabling the inclusion of students with severe visual impairments in regular PE classes?

### I. Re: Students with Severe Visual Impairments

<table>
<thead>
<tr>
<th></th>
<th>Ability to care for personal needs</th>
<th>Ability to follow directions</th>
<th>Adaptability or flexibility</th>
<th>Age-appropriate play or leisure skills</th>
<th>Age Appropriate Social skills (e.g., ability to interact with peers)</th>
<th>Motivation (or &quot;inner drive&quot;)</th>
<th>Amount of vision</th>
<th>Presence of additional disabilities</th>
<th>Emotional stability</th>
<th>Travel skills</th>
<th>Sport experience/ background</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
</tbody>
</table>

### II. Re: Family of the Student with a Severe Visual Impairment

<table>
<thead>
<tr>
<th></th>
<th>Accepting family attitudes</th>
<th>Cooperation in problem-solving and planning</th>
<th>Interest in school activities</th>
<th>Realistic expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### III. Re: School Environment

<table>
<thead>
<tr>
<th></th>
<th>Accepting and Flexible PE teacher</th>
<th>Supportive School Administrator</th>
</tr>
</thead>
</table>
|   |                                   |                                   | 2 of 5
18. Adequate special/ adapted sports equipment

19. Adapted PE manuals

20. Availability of District Resource Teacher(s) for Students with Visual Impairments

21. Informal brainstorming/ problem solving with teacher colleagues

22. In services from adapted PE specialists

23. Peer acceptance and interaction

24. Absence of facility and architectural barriers

IV. The Community

25. Access to related services (e.g., BC Blind Sports Assoc.; BC Blind Skiers Assoc., etc.)

26. Opportunities for students with severe visual impairments to participate in local peer sport activities

27. Availability of a variety of accepting recreational resources (e.g., parks, community centres, etc.)

V. Features of resource materials such as adapted PE manuals and teacher guides

28. Anecdotal success stories

29. Safety issues

30. Activity specific help (i.e. how to modify specific rules or add audible cues, etc.)

31. Suggestions for equipment modifications
E. Do you have adapted PE resource materials (e.g. manuals) conveniently available to you?
   Yes (please complete sections E, F, and G)
   No (please skip to section G)
   Do not know (please skip to section G)

If you answered yes:
Does the adapted PE literature available to you:

1. provide enough tips to make activities safe for students with severe visual impairments?
   [ ] Yes [ ] No [ ] Do not know

2. include useful anecdotal success stories of inclusion?
   [ ] Yes [ ] No [ ] Do not know

3. provide enough activity specific help?
   [ ] Yes [ ] No [ ] Do not know

F. If you have received the Moving to Inclusion Manual for Visual Impairments (MTI-VI), please assess the following:

1. The MTI-VI has helped you to provide an appropriate PE program for your student(s) with severe visual impairments?
   [ ] strongly agree [ ] disagree [ ] undecided [ ] agree [ ] strongly agree

2. The MTI-VI is more useful to you in providing an appropriate PE program for students with less severe visual impairments?
   [ ] strongly agree [ ] disagree [ ] undecided [ ] agree [ ] strongly agree

3. What do you like to **most** about the MTI-VI manual?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

4. What do you like the **least** about the MTI-VI manual?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________