“Blindness is a private matter between a person and the eyes with which he or she was born.”

— José Saramago
CHAPTER -IV

REVIEW OF RELATED LITERATURE
4.0 Introduction

Different aspects of the blindness and visual impairment have received a lot of attention and various kinds of research work have been done in India and other foreign countries. Some of the research work done at the international and national level has been discussed below.

4.1 Research Work at the International Level

Smith, John W. and Kandath, Krishna P. (2000) informed by a review of the extant literature on communication and individuals who were blind or visually impaired. Their chapter addressed the following: (1) what it meant to be blind or visually impaired and an exploration of the different types of blindness and visual impairments; (2) communicative experiences of people who were blind or visually impaired; (3) the idea of culture and the dynamics of viewing those who were blind or visually impaired as a cultural group in society; (4) communicative strategies of people who were blind or visually impaired; (5) research on communication between the blind or visually impaired and those having sight; and (6) employment issues and communication within organizations and their cultures and subcultures. The chapter concluded with a summary of the research, theory, and methods discussed, and the author’s suggestions for future research on communication with the blind or visually impaired.

De Mario, Norma C. and Lian, Ming-Gon John. (2000) while conducting their study on teacher’s perceptions of need for and competency in transcribing Braille materials in the Nemeth Code reported the results of a survey of 205 teachers of visually impaired
students in Illinois and Massachusetts that asked the teachers to rate their perceived competency in transcribing math materials into the Nemeth code, their need to do so, and their anxiety about teaching math and transcribing the math materials. Results indicated a significant difference mean ratings on competency and need by respondents for 23 of the 55 math skills on the survey.

Kakizawa, Toshibumi; Douglas, Graeme; Kagawa, Kunio and Mason, Heather. (2000) surveyed students with visual impairments in special and mainstream institutions in Japan. They reported on a survey of children with visual impairments in Japan (4537 in special schools and 233 in visual impairment units in mainstream schools) conducted in 1995. They concluded that although there appeared to be a decrease in the number of children with visual impairments, the proportion of those with additional disabilities was increasing.

Mc Gaha, Cindy G. and Farran, Dale C. (2001) studied the effects of visual status and setting on interactions in an inclusive classroom. They examined the effect of visual status (visually impaired or sighted) and setting (indoor or outdoor) on the social behaviors of preschool–age children in a mainstream setting. Nine visually impaired and eleven sighted children aged 3-6 years were observed. It found that regardless of their visual status, the children spent significantly more time near sighted children than near visually impaired children.

Regarding Distance Education in 2001 Huebner, Kathleen M. and Wiener, William R. (2001) reported that there were significant personnel shortages in education and rehabilitation in the field of blindness and visual impairment. Some university – based programs
that prepared teachers, orientation and mobility specialists, rehabilitation teachers and counselors, and low vision specialists to serve individuals with visual impairments strived to increase the number of service providers and assisted professionals in maintaining skills and best practices in many ways. This article provided a brief overview of one of the approaches – Distance Education.

De Mario, Norma C. and Heinze, Toni. (2001) investigated the status of distance education in personnel preparation programs for visual impairments. A questionnaire was distributed to 37 universities with programs in the education of children with visual impairments. The survey found that over half the personnel preparation programs for teachers of children with visual impairments, orientation and mobility specialists, and rehabilitation teachers included a distance education component and used a wide variety of technology and instructional methods. Most programs also had a field experience component and relied on external funding for support.

To study the views of students with visual impairments on the support they received from teachers Chang, Sophie Chien-Huey and Schaller, James. (2002) investigated the perceptions of 12 adolescents (aged 14-20 years) with visual impairments regarding the support they received from teachers for their emotional and learning needs in both residential and mainstream schools. A qualitative research design using semi-structured in depth interviews and data analysis were used. Results showed that participants’ perceptions of teachers centred on two themes- emotional and learning needs- and whether they felt supported for those needs. The participants’ narratives also
illustrated the participants’ emotions arising from interactions with teachers and a number of skills of positive emotional development.

Matsunaka, Kumiko; Inoue, Akihiro and Miyata, Yo. (2002) in order to find out the effect of sight levels and daily stressors on coping styles, examined the structures of stressful daily events in visually impaired students with three types of coping behaviors and sight levels according to the Landolt ring test. 69 students (aged 18-63 years old) were interviewed and divided into three groups according to their sight levels. 23 students in sight -1 group were totally blind, 25 students in sight- 2 group had a sight level of 0-0.01, and 21 students in sight- 3 group had a sight level of 0.02 and 0.04. They were provided examples of stressful events for three coping styles (Don’t, Do by others, Do by oneself). Statistical Analyses of data indicated that the sight levels of visually impaired students were related to the structure of stressful events and coping styles.

Oka, Noriko (2003) clarified through an analysis of Campbell’s music education programme at the Perkins Institute and Massachusetts Asylum for the Blind what factors were necessary for the development of educational programme for persons with visual disabilities in the U.S., especially in relation to the development of vocational education in the 19th century. From an analysis of the education practices of the time and the results at the Perkins Institute, it was suggested that an excellent teacher, good quality teaching materials and tools, appropriate educational content, help with finding employment for pupils, and the systematization and succession of
good teaching methods were indispensable for the improvement of education, especially vocational education.

Enumerating the principles and concepts for information and communication technology designs, Adams, R. and Langdon, P. (2003) stated that HCI (Human Computer Interactions) offered various methods for universal design of ICT (Information and Communication Technology) for people with special requirements. These methods included design heuristics, detailed models based on task analysis, and complex psychological models of the user. This article presented an alternative: simple theory which worked on two levels that guided good practice and supported applied research.

Millar, S. (2004) to study reading by touch in blind children and adults put forth that script for the blind use touch as a substitute for vision. A number of different systems have been proposed at various times. But Braille is undoubtedly the script most commonly used by blind people throughout the world. It is taught to visually handicapped children in India, in Japan, in Russia, in all the countries of continental Europe, as well as in the English speaking world. Most studies of reading by blind children and adults have been on braille. Braille was, consequently, the main focus in the chapter. Two other systems, “Moon” (simplified capital letters), and the “optacon” (vibrotactile stimulation of the fingertip) were discussed briefly. But braille (characters based on a six point matrix) was of special interest for understanding how touch functioned. The chapter considered how the perceptual and orthographic basis of a tactual reading system related to the language which it was intended to convey, and how it was acquired.
Regarding educational and assistive technology for people with disabilities, Scherer, Marcia J. (2004) presented a comprehensive approach to matching the right assistive technology with children with disabilities, especially visual and auditory disabilities. The author explored the way disabilities, especially those involving the senses, could lead to isolation and lack of “connectedness,” and how this led to educational difficulties. A step-by-step model for assessing and evaluating the needs of individual children and finding the right assistive technology to help each other, was provided.

Hisae, Miyauchi (2005) in her study of outreach projects in institutions for the blind in Japan stated that Japan had been practicing separate educational systems for the pupils with visual impairments for a long time. Yet, the movement of inclusion permeated in the last decade, and the role of the 71 institutions for the blind had started to be questioned. However, visually impaired pupils attending regular institutions had such needs as: support in the curriculum studies, mobility and orientation training, and skills in literacy. In a country where a solid welfare collective like RNIB in the UK did not exist, these needs were being met through support for institutions for the blind. For the last 6 years, the Institution for the Blind Association had been carrying out a questionnaire survey regarding the outreach projects among all the institutions for the blind. It showed that these institutions had taken a leading part in supporting visually impaired people in different ages.

Evett, Lindsay and Brown, David (2005) spoke about the production of Clear Print Booklet by The Royal National Institute of the Blind (RNIB) which contained recommendations for the production of
Clear Print for the blind and the partially sighted. The British Dyslexic Association (BDA) produced a Dyslexia Style Guide, which covered similar issues. Both focused on producing text, which was clear and therefore more easily read, and there was significant overlap between the two. By comparing the two, a set of specifications for the production of text was generated. Using the specifications should produce clear text for both dyslexic and visually impaired readers. It should improve readability for all. The text specifications plus additional recommendations from the BDA were considered with respect to an existing set of website design guidelines for dyslexic readers to produce an enhanced set of guidelines compatible with both. These guidelines were recommended to be followed as standard, both for their benefits to visually impaired and dyslexic readers, promoting accessibility for these groups, and for their potential to improve accessibility for all.

To study self-evaluation and recruitment of feedback for enhanced social interaction Jindal-Snape, D. (2005) trained a visually impaired student to evaluate his social behavior and to recruit feedback from his sighted peers. Sighted peers were trained by him to provide the feedback. The self-recruitment of feedback improved the student’s accuracy in evaluating social skills requiring visual cues. In addition, the peers extended their feedback to other aspects of the social environment than social behavior.

Ophir-Cohen, Michal; Ashkenazy, Eyal; Cohen, Ayala and Tirosh, Emanuel (2005) studied emotional status and development in children who were visually impaired. They examined the developmental attainments of children with visual impairment, aged 6 – 59 months,
with and without emotional deficits, behavioral deficits, or both. It found that an emotional or behavioral deficit was significantly related to gross motor and visual motor integration, expressive and receptive language, and social or personal development, and that there was an interaction between the effect of the mother’s education and the child’s age on the child’s perception of language.

Yabe, Takao and Kaga, Kimitaka (2005) conducted sound lateralization test in adolescent and blind individuals and stated that blind individuals required to compensate for the lack of visual information by other sensory inputs. In particular, auditory inputs were crucial to such individuals. To investigate whether blind individuals localized sound in space better than sighted individuals, they tested the auditory ability of adolescent blind individuals using a sound lateralization method. The interaural time difference discrimination thresholds of blind individuals were statistically significantly shorter than those of blind individuals with residual vision and controls. Those findings suggested that blind individuals have better auditory spatial ability than individuals with visual cues; therefore, some perceptual compensation occurred in the former.

Edmonds, Caroline J. and Pring, Linda (2006) compared children with visual impairment and children with sight to generate inferences from written and spoken language. They investigated the ability of sighted children and children with visual impairment to comprehend text and, in particular, to draw inferences both while reading and while listening. Children were assigned into ‘comprehension skill’ groups, depending on the degree to which their reading comprehension skill was in line with that predicted by their decoding
skill. They then read (either print or Braille) and listened to a series of novel short stories. These were followed by a series of questions, which required either the generation of inferences, or an answer that could be taken literally from the text. The results suggested that children with and without sight were comparable in their ability to draw inferences, and that children with visual impairments showed an advantage for literal questions under auditory presentations.

To improve spatial perception by people who were blind Lahav, Orly. (2006) through his research concluded that mental mapping of spaces, and of the possible paths for navigation of those spaces, was essential for the development of efficient orientation and mobility skills. Visual ability was a crucial component to effective mental mapping. People who were blind consequently found it difficult to generate useful mental maps of spaces and navigate competently within them. The research assumed that the supply of appropriate spatial information through compensatory sensorial channels as an alternative to visual channel might contribute to the anticipatory mental mapping of unknown spaces and consequently might improve spatial information for people who were blind.

To study the developmental stages of reading processes in children who were blind and sighted, Steinman, Bernard A.; LeJune, B. J. and Kimbrough, B. T. (2006) compared the development of print and Braille reading in children who were blind and sighted in relation to Chall’s stage model of reading development. Chall’s model included a pre–reading period, in which concepts were developed, middle stages, in which skills that were necessary for decoding text were developed; and later stages, which distinguished skill readers on the
basis of effective comprehension and integration. The relevance of a developmental theory for directing training methods that facilitated Braille literacy instruction was discussed.

Sanchez, Jaime and Saenz, Mauricio (2006) studied three-dimensional virtual environments for blind children and found that information technologies were increasingly helping to integrate and socially include people with visual disabilities. Computing technologies have contributed grandly to attain this goal through innovative techniques and applications. Virtual environments, I/O interface and sound based applications altogether with usability and cognitive impact studies are some of the most used research designs for children with visual disabilities. This study presented the design and usability evaluation of three-dimensional (3D) interactive environments for children with visual disabilities. They introduced Audio Chile and Audio Vida, interactive virtual environments that could be navigated through 3D sound to enhance spatiality and immersion throughout the environments. 3D sound was used to orientate, to avoid obstacles, and to identify the position of diverse personages and objects within the environment. Usability evaluation results indicated that sound could be fundamental for attention and motivation purposes during interaction.

Odaci, H.; Kalkan, M. and Karasu, P. (2009) examined the cognitive errors as predictor of quality of life of mainstreamed elementary students. Quality of life was the degree of well-being felt by an individual. The functional deficiencies, which occur due to physical, cognitive, sensory, emotional disorders, affect the quality of life of the
individuals. In this study, it was aimed to analyze the cognitive errors as the predictor of the quality of life of the mainstreamed students. The sample of the research was composed of 117 mainstreamed students (46 of the students are female and 71 of the students are male) selected by random sampling method who attended from first to fifth classes of a school under the control of Ministry of National Education in the academic year of 2007-2008 in Turkey, Samsun. The students were evaluated by the Children’s Negative Cognitive Errors Questionnaire and Quality of Life Inventory for Children. The results of multiple regression analyses indicated that cognitive errors predicted quality of life of the mainstreamed elementary students. The results of the Pearson product-moment correlation coefficient showed that cognitive errors were related to quality of life of the mainstreamed elementary students. Future studies were needed to replicate these results. Moreover, the relation between cognitive errors and quality of life were examined by self-report measures. In the future studies, different methods such as interview or observation could be used.

Tanaka, Mari; Komaki, Ayano; Takiyoshi, Michika; and Watanabe, Toru (2010) examined the contents of internal coordination done by an elementary institution special educational needs coordinator from the point of view of a grounded theory approach, using a structure-construction qualitative research method. Internal coordination refers to the process of self-regulation by a coordinator. The participant was an elementary institution teacher who had been appointed as a special educational needs coordinator. His words and actions as coordinator during approximately 1 year were analyzed and categorized as either
the agent for control or an expression of intention with flexibility. Which of these 2 kinds of coordination he used depended on whom he was dealing with. In coordination with a main teacher who was expected to support a child with special needs, the coordinator showed continuity in judgment as to when to lead the teacher to set out a specific proposal, and when not to provide advice. Dealing with children's parents, the coordinator decided whether to accept their anxiety and, simultaneously, to indicate support. In addition, the coordinator monitored his own accumulating experience cyclically. It appeared that such internal coordination constructed with his concept of each category allowed him to conduct external and practical coordination.

Were, C.M.; Indoshi, F.C. and Yalo, J.A. (2010) stated that variation in self concept and academic achievement particularly among the visually impaired pupils had not been conclusively studied. The purpose of the study was therefore to determine if there were gender differences in self-concept and academic achievement among visually impaired pupils in Kenya. The population of the study was 291 visually impaired pupils. A sample of 262 respondents was drawn from the population by stratified random sampling technique based on their sex (152 males and 110 females). Two instruments were used in this study: Pupils’ self-concept and academic achievement test. Data analysis was done at $p \leq 0.05$ level of significance. The t test was used to test the relationship between self-concept and achievement. The data was analyzed using Analysis of Variance (ANOVA) structure. The study established that there were indeed gender differences in self-concept among visually impaired pupils in Kenya. The study
therefore recommend that the lower self-concept observed among boys should be enhanced by giving counseling and early intervention to this group of pupils with a view to helping them accept their disability.

Herssens, J. and Heylighten, A. (2012) to explore the spatial experiences of the blind children reported on a photo-ethnographic study that was part of a wider inquiry into the haptic qualities of the built environment. To stimulate conversation with children born blind about their haptic spatial experiences, they invited them to take pictures of their daily living environment - a school for children with visual or hearing impairments or autism. The pictures taken by the blind children offered a unique perspective on how they experienced the school environment. Non-visual triggers for taking pictures were both tangible (tactile, olfactory, and auditory) and intangible (memories, and knowledge) in nature. Besides offering insights into non-visual stimuli in the school, this study suggested that photo-ethnography might be a useful approach for communicating about sensory experience with children born blind and for overcoming a lack of vocabulary to articulate those experiences. Moreover, using the camera provoked sensory experiences and memories in general and revealed details on haptic perception in particular.

4.2 Research Work at the National Level

Sharma, S. (1988) while working on mainstreaming the visually handicapped studied the problems of the visually handicapped who in India constituted about one-third of the blind population of the world and were generally exploited and left out of the mainstream of
national progress. Loss of sight did not produce any special behavior among the blind. Maladjustment in society, family and especially in school, and unsuitable school settings were the most prominent factors which led to academic retardation or visually handicapped. After completing pre-primary or primary education at special institutions, emphasis should be laid on placing the visually handicapped in integrated educational settings.

Banerjee, N. (1988) investigated the problems of adjustment of blind students in secondary schools of West Bengal. More blind students were found to be maladjusted than the sighted. Nearly one in five students had a moderate level of maladjustment with home environment, school environment and peers of the opposite sex. Surprisingly the percentage of blind children maladjusted to home environment was one and a half times more than to school environment. How much of it was due to home environment, how much due to segregation in special schools of the blind, was a moot question.

Muruganandam, S. (1990) while developing teaching learning strategies in teaching Science for visually impaired children found that the visually impaired children learned more science concepts when they were taught through the specifically prepared teaching–learning materials. The learning package on science teaching for visually impaired children was found effective.

Mandaravalli, M.R. (1991) analysed the cognitive development in visually handicapped (VH) children with specific reference to the concrete operational stage. In all the tasks selected for the study with 10 VH children, the sub stages found among VH to attain the
operational level of thinking (stage III) corroborated with the sub stages of Piagetian theory, but with a clear developmental lag with respect to their age. Most of the VH children processed from stage I to III directly. VH children attained the Concrete Operational Stage (COS) at a later stage as compared to the sighted children. The chronological age of VH and their COS was not linear. There was no significant relationship found between the nature of handicap and the COS of VH children. The relationship between COS of VH and the type of management in their schools was not significant. There was no significant relationship between the COS and the sex of the VH children. All the 10 children acquired different higher levels of conservation in their post–test as compared to their pre–test performance on both the tasks.

Sahoo, J. (1991) made a comparative study of the behavioral characteristics of the blind, deaf, dumb and normal children. The normal children showed much better behavioral functioning as compared to the blind, the deaf and the dumb. The blind, deaf and the dumb children exhibited low self–concept as compared to the hearing impaired in both the settings. It was also found that the medium of instruction had no impact on the science achievement of the hearing impaired studying in integrated and special schools excluding class VI.

Mason, H.L. and Shukla, S.R. (1992) examined the rationale behind the development of the Blind Learning Aptitude Test (BLAT) by Newland, and then described the results of its usage in England, Wales and India. These results were compared with the original standardization in the U.S.A. The difficulties of testing the blind
population in those countries were discussed and some tentative suggestions about the future usage of the test were made.

Advani (1992) reported that special schools for visually impaired were quite limited in numbers and support services were painfully inadequate.

To determine hand preferences and hand ability in congenitally blind children, Ittyerah, M. (1993) tested congenitally blind and sighted blindfolded children between the ages of 6 and 14 years for hand preference with performance tasks. There were no differences between the groups in direction or degree of hand preference. The degree of handedness increased with age and was essentially linear though the blind seemed to be somewhat less lateralized at the younger ages. When the same groups were required to match three-dimensional bricks for height, depth, breadth, and volume, no hand advantages were found for either group. Both groups of children improved in their accuracy of spatial discriminations with age. Further, the degree of lateralization on the handedness task did not relate to ability on the tactile task or to differences between the right and left hands on the tactile task. Thus, there is no effect of blindness on tactile matching ability nor is there an effect of the hand used in the task.

Gupta, H.O. and Singh, A. (1994) studied the status of science teaching in Indian schools for the visually impaired children. 189 integrated and 407 special schools from all over India were used as sample to mail questionnaire. Only 29 schools both special and integrated responded to the mailed questionnaire, which finally constituted the sample. Researchers concluded that the quality of
science teaching for visually impaired was much below the expected standards in both types of schools.

Lali, S. (1995) conducted a comparative study of scholastic performance of the visually handicapped pupils studying under the integrated system with that of the normal pupils in classes VIII, IX and X in secondary schools of Kerala.

Punani, B. (1996) reported that integrated education enhanced social integration and social acceptance of the students with visual impairment. Integrated education could not be successful without the active participation of parents, general educators and school administrators. A general view of the parents and educators of the visually impaired were that since a child would eventually be expected to live in a community, it would be essential to provide education in the integrated set up rather than in a residential school. Integrated education encouraged the family to feel and assume its responsibility towards the child instead of shifting it largely to the institution.

Punani, B. (1997) documented the comparative effectiveness of different modes of education of the visually impaired with respect to a number of pre–determined objectives. The sample comprised a total of 130 visually impaired children; of those 50 children were from integrated education, 26 were from semi–integrated education and 54 from residential schools. Their age ranged between 10-15 years who were studying in classes IV, V and VI. The study found i) integrated education to be more effective than residential education, ii) no difference in the coverage of congenitally blind children in the three
modes of education, iii) semi–integration was most effective in enrolling children who had it.

Julka, A. (1998) studied teacher empowerment and successful mainstreaming of visually impaired children. The study aimed at examining the various issues and the role of regular and special teacher related to the education of the visually impaired children in mainstream schools. On the basis of the findings the researcher concluded that if inclusive education was to be the focus of educational policy in near future, the reciprocal role of regular and special teachers would be crucial. Parents needed to be counseled before the children were integrated in mainstream schools. Successful mainstreaming of visually impaired required two levels of education that is academic and compensatory which could be imparted jointly by the classroom and special teacher. Children with visual impairment should not be segregated and regular school teachers should be given appropriate incentives for modifying the learning environment for the visually impaired.

Ittyerah, M. (2000) compared congenitally blind and sighted blindfold children between the ages of 6 and 15 years with each other for hand preferences and hand ability. All the children performed a 20-item hand preference test and every child performed three hand ability tasks: a sorting task, a finger dexterity task, and the Minnesota rate of manipulation task, each separately with the left and the right hand. Results indicated no differences between the hand preferences of the two groups. The sighted children were faster than the blind children on some of the hand ability tasks. There were no differences between the left and right hands for any of the tasks for either group. Results
indicated equipotentiality between the hands and suggest the possibility of training both hands during development on tasks that require tactile ability.

Takeshi Natsume, Robinson Thamburaj. (2001) while studying challenges in the education for the visually impaired in India stated that visual impairment was one of the major socio-economic issues in India. There was an urgent need for awareness among educators, policy makers, parents and the disabled people among visual impairment. They presented a brief summary about the prevailing general situation of the visually impaired people and their training and job placement prospects in the country. Emerging needs concerning educational facilities for the visually impaired and focus on the issues related to cost effective integrated education were discussed. Developing assistive technologies and the role of institutions in making them accessible to the disabled in the new information age were also discussed.

To study self–perception of visually impaired children aged 3-10 in India, Christy, B.; Shanimole; and Nuthetie, R. (2002) used an institutional-based prospective study through stratified sampling to analyze the perceptions of children with visual impairments. Data were gathered through a detailed questionnaire, administered to 50 visually impaired children (aged 3-10 years), with 3 major categories-expression of moods and feelings, expression of needs and wants, and expression of preferences and decision–making. Results indicated that subjects had no significant problems expressing moods and feelings, preferences, and decisions. Some subjects showed variations and problems in expressing sympathy (46%), the choice of clothes (34%),
and preferences for the environments and play items (50% and 54% respectively). There were relatively few problems with respect to the expression of needs and wants. It was concluded that self–perceptions were stronger and took place more often in childhood than at any other time of life.

Bhattacharjee, H.; Das, K.; Borah, R.; Guha, K.; Gogate, P.; Purkayastha, S. and Gilbert, C. (2008) tried to determine the causes of severe visual impairment and blindness amongst children from schools for the blind in the four states of North Eastern Region (NER) of India. They concluded that nearly half the childhood blindness in the NER states of India was avoidable and Vitamin A deficiency formed an important component unlike other Indian states. More research and multi sectorial effort was needed to tackle congenital anomalies.

Kalyanpur, M. (2008) stated that in contrast to the phenomenon of minority overrepresentation in special education in developed countries such as the United States, a paradoxical situation occurred in many developing countries, whereby majority populations were underrepresented in the educational system. Some of the prevailing and traditional societal and political-economic factors specific to India that contributed to this underrepresentation, such as a paucity of resources that affected children from low socioeconomic backgrounds, gender differences in child rearing and educational expectations that affected girls, and negative attitudes toward disability were examined.

Ittyerah, M. (2009) studied hand ability and practice in congenitally blind children. He tested the assumption that blind children will
improve in ability with practice in spatial tasks in a group of 90 congenitally blind and blindfolded sighted children between the ages of 5 and 15 years. All the children were tested for hand preference. The children were then pre-tested and post-tested on four tasks that measured various hand skills with their left and right hands. The period of practice between the pre and post-test was four months. Results indicated a percentage gain with practice during development for the left and the right hands of the blind children. The left and right hands of both groups of children did not differ in percentage gain, indicating little or no relationship between hand preference and hand ability. The effects of practice showed gains for the blind children compared to the sighted blindfolded children in the post-test. Results were discussed with a view that use of self-referent cues can improve spatial ability in blind children.

Koganuramath, M.M. and Choukimath, A.P. (2009) studied on Learning Resource Centre for the Visually Impaired students in the Universities to foster Inclusive Education. They stated that The Libraries need to be committed to ensure full access to their range of services and facilities to their user community. They presented the views and concerns about achieving the goals of ‘inclusive education’ in the Indian higher education system through the computer and assistive technologies of a ‘Learning Resource Centre for the Visually Impaired Students. With reference to the several reports of concerned ministries, organizations, and commissions, need and scope for providing disability information services to students, research scholars, faculty and staff with disabilities in the universities were discussed. It also emphasized a successful case of “M. K. Tata
Memorial Learning Centre for Visually Challenged Students” to illustrate how best the university library’s information resources and services could be extended to its disabled user community. It also enumerated the salient features, special services, special resources, assistive/adaptive technologies and futuristic plans of a state-of-the-art ‘Learning Resource Centre for the Visually Impaired Students’ to foster inclusive education.

Halder, S. and Dutta, P. (2012) explored the self–concept of adolescents who were sighted and blind with respect to gender in India. The sample was made up of 160 participants aged 15-18 years: of whom 100 were sighted and 60 were blind. The results of t-tests illustrated that sighted male adolescents scored higher in the overall self–concept scores as compared to sighted female adolescents. However, such significant differences in the self–concept scores were not found between the male and female adolescents who were blind. The sighted adolescents scored higher than the adolescents who were blind in three of the total six dimensions of self–concept, thus also scoring higher on the overall self–concept score.

Nadeem, N.A.; Puju, J.A. and Zahoor, N. (2013) compared visually impaired and hearing impaired students on various dimensions of mental health. A sample of 200 students (100 visually impaired and 100 hearing impaired) was selected randomly from various colleges in Kashmir. Mental Health Battery by Alpana Sen Gupta was used to collect data. The statistical analysis was interpreted using some statistical treatments. There was significant mean difference between the two groups of students on their mental health.
Kamble, K.L.; hole, D. and Jadav, V. (2013) emphasized on accessible biology laboratory which will be capable of accommodating visually impaired students along with normal vision student. The present study revealed that conventional biology laboratories without any assistive technologies for visually impaired were not able to provide wholesome learning environment to visually impaired students. In conventional laboratories visually impaired students faced problems in performing practical of microscopy, anatomy, physiology, biochemistry, dissection, taxonomy and morphology. By making certain modifications and integrating assistive technologies, conventional laboratory could be made accessible for visually impaired where both visually impaired and normal students could work together.

4.3 CONCLUSION

Inspite of considerable amount of work being done in the field of blindness and visual impairment, a significant research gap was noted. Not much research work was done in the field of education of the blind. There were not many studies which focused on any particular country’s system of educating the blind. Also the fact, that there was no comparative study between two countries regarding education of the blind highlighted the need and importance of the present study.

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Review of Related Literature

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Review of Related Literature

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