Chapter 1

INTRODUCTION
1.1 Learning Disability

We live in a literate society. In today’s knowledge based world, literacy is the foundation for all learning. Socioeconomic development of a country depends directly on the literacy rate of that country. Such is the importance of literacy today. UNESCO defines literacy as the ability to read, write and use arithmetic. It is the ability to use the dominant symbol systems of a culture to understand, communicate and gain knowledge. This high socio-cultural need has impelled culturally constructed handicap. Learning Disability is such a handicap for acquiring literacy.

1.1.1 Definition

Learning Disability (LD) is defined as a group of neurodevelopmental disorders manifested as persistent difficulties in learning to efficiently read, write or perform mathematical calculations despite normal intelligence, conventional schooling, intact hearing and vision, adequate motivation and socio-cultural opportunity (Lagae, 2008; Karande et al, 2011).

1.1.2 Terminological clarification

LD is characterized by specific deficits in scholastic skills, and hence the term specific learning disability (SLD) is also used. LD is broadly classified into different types such as reading disability/dyslexia, spelling disability and arithmetic disability. Different terminologies are also used in different places. But LD in general refers to heterogeneous group of disorders manifested by significant difficulties in the acquisition of reading, writing, reasoning or mathematical abilities. Hence the term LD is used throughout the thesis.
1.1.3 Characteristics

The characteristic features of LD are that the scholastic backwardness in children stem from developmental neurological disturbances and that the difficulties continue to exist, despite appropriate instruction and intervention. A number of cognitive, neuropsychological and imaging researches over the past four decades have confirmed cognitive and neurological deficiencies in children with LD. LD is also known as a hidden disability because of its subtle manifestations, heterogeneous expressions and difficulties in identification. The disability manifests mainly in academic related activities where affected children display adequate reasoning and intelligence baffling the teachers and parents as to their inability to acquire simple academic skills. Its heterogeneity expresses differently in different children in the form of poor attention and concentration, poor recall, poor planning ability, inability to read or slow and incorrect reading, making persistent spelling mistakes, illegible hand-writing, reversing letters, poor sequencing, lacking number concept, inability to perform simple arithmetic calculations, etc.

1.1.4 Learning Disability in India

LD is a culture specific disorder even though the underlying cause is neurodevelopmental. Its expression is affected by the nature of orthographic system and teaching methods. Educational system, school and government policies invariably influence identification and management of the disorder

1.1.4.1 Problems in identification

Identification of the disability is complicated and has gone through several modifications in the west from IQ-achievement discrepancy method, grade level achievement discrepancy method, and neuropsychological assessments to the present
reaction to intervention method. To emulate the western methods of identification is impractical in India due to several factors like the lack of uniformity in quality of education where quality greatly varies from public to private schools and rural to urban schools, lack of uniformity in curriculum, where schools follow different curriculums like state syllabus, Central Board of Secondary Education (CBSC), Indian Certificate of Secondary Education (ICSC), International Baccalaureate (IB), International General Certificate of Secondary Education (IGCSE) syllabus that greatly differ from each other in their grade level difficulties, multilingualism where the medium of instruction in schools may not be the same as children’s mother tongue. All these factors make it difficult to follow a uniform diagnostic method throughout the country.

The definition of LD clarifies that any scholastic backwardness due to low intelligence, poor or no schooling, inadequate hearing and vision, poor motivation and lack of socio-cultural opportunities are not due to LD. Hence, a proper diagnosis ideally requires a multidisciplinary team comprising of pediatrician, clinical psychologist and special educator to rule out the above possibilities for scholastic backwardness (Karande et al, 2011). Another complication associated with diagnosis is that a conclusive diagnosis of LD is difficult to make until the child is in the fourth grade, or about 7-8 years old because of the developmental variances among children. This late diagnosis leaves them unattended until they develop huge grade level discrepancies and show obvious signs of LD and prevent them from availing early interventions. Remedial education started early in life has better benefits on account of the neural plasticity in developing children. To overcome this difficulty, Reaction to Intervention (RTI) method is adopted in the US since the 2004 reauthorization of the Individuals with Disabilities Education Act to identify LD. The primary intention
of this model is to support the “at risk” children at the earliest. The program identifies children at some level of risk for not meeting academic expectations at earlier grades and is given intense instructions through tier 1 and tier 2 programs. These instructions are intense classroom teaching carried out in small groups and are planned by the teachers with less regard to individual strengths and weaknesses or cognitive deficits. These instructions are to provide special attention to at risk children and more opportunities to practice skills. Children who do not possess cognitive deficits may reach successful level of competence by these instructions and may not want any further special attention. But children who do not respond to these special instructions may qualify for LD and may require special education service. This method requires immense support from the class teacher and school authorities. Class teacher is the first to observe child’s academic performance and play important role in early identification and thus needs to be sensitive to notice such signs as delayed language development, inability to attend to the sounds of words, trouble playing rhyming games, or confusing words, etc. The school authorities must also be supportive in providing resources, time and space for the at risk children. Such a supportive environment is available in handful of schools in India, today. Presently exclusion criteria, IQ assessment, scores below 2 standard deviations in grade level assessments, and other neuropsychological assessments are being practiced to identify children with LD, in India.

1.1.4.2 Limited recognition and policies

Every disability needs recognition from the government to safeguard rights, ensure equal opportunities and full participation of the disabled. In this regard, LD has got minimal recognition from the government of India. The enactment of three legislations for the rehabilitation and welfare of people with disabilities viz, The
Persons with Disabilities Act, 1995; The Rehabilitation Council of India Act, 1992; and The National Trust Act, 1999 have been important milestones in India. They deal with all aspects pertaining to rehabilitation, from prevention, training, employment, long-term settlement, human resource development and research, and documentation. However, LD is not included in any of these acts. As of now, the only facilities that can be availed by these children are concessions in examinations conducted by the various examination boards. There is no uniformity in these provisions among states and examination boards. The Indian Certificate of Secondary Education (ICSE) board provides extra time 15 minute/per hour or 25% of total time, exemption from second language, use of calculator in some cases for mathematics, use of a writer and question paper can be read out to the student if required. The Central Board of Secondary Education (CBSE) board provides use of a writer, additional 1 hour for each paper and one compulsory language as against 2 in addition to any 4 of the following subjects: mathematics, science, social science, another language, music, painting and home science. Maharashtra Board of Secondary & Higher Secondary Education provides extra time of 30 minutes for SSC and 1 hour for HSC students, exemption from third language (Hindi/Marathi) for SSC students. HSC students may take a vocational subject instead of the second language, exemption from paper II in Mathematics (Algebra and Geometry) for SSC students, students may take a vocational subject of 75 marks in lieu of Mathematics Paper II and a writer may be provided as per the rules of the board. For students of standard I to IX, the school may apply to the Deputy Director of Education through the Divisional Inspector for similar provisions. Maharashtra remains the only state where children with LD are trained to take examinations, incorporating the provisions, from primary classes onwards. Recently the Higher and Technical Education Board extended these provisions to
technical Institutions, nonagricultural and agricultural universities, effectively covering students in undergraduate and postgraduate courses. Tamil Nadu provides extra time to answer examination paper, use of calculator, using Clarke’s table, appointment of scribe to read the question paper or answer the paper. (Karande et al 2011) The other provision that children with LD in other states can avail is to take admission in the NIOS which allow a choice of subjects. However, NIOS is not available at all schools. The above provisions and concessions are accessible on producing disability certificate in the prescribed form issued by the recognized institution. In Karnataka, candidates with LD need to be certified either from the National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, St John’s Hospital, Bangalore, All India Institute of Speech and Hearing (AIISH), Mysore, any psychiatrist working in a government hospital, any clinical psychologist with an M.Phil qualification and attested by a government doctor, not below the rank of a district surgeon (Karande et al, 2011). As to the participation of schools, no law in any state of India mandates schools to provide remedial education within its premises or government funding for remedial education services. The help and support children with LD in India today are getting from a handful of NGOs, and special schools and hence only a small number of children are receiving the benefits.

1.1.4.3 Limited intervention facilities

Interventions for children with LD are individualized with special consideration to their deficits, strengths and weaknesses. Phonologically based and neuropsychologically based interventions like are common. Remediation first target their cognitive deficiencies through tasks and practices to either enhance deficient cognitive skills or use compensatory cognitive mechanisms and then transfer the training to academically specific tasks. Remediation is not carried out in schools but
is available in private or government special remedial centers. Since the process is time, cost and resource demanding only a few children are getting the attention.

### 1.1.4.4 Limited public awareness

LD awareness in India is also in its nascent stage. In the west, the disability has attracted considerable attention, owing to the long efforts of the parents, teachers and researchers, which has enabled children with LD avail the much needed support from the educational institutions and the government. In a country like India where at most importance is placed to academic achievements, such awareness in the public, parents, and teachers is highly required to reduce the negative attitude and prejudices that are attached to children with LD and to provide them adequate educational, psychological and legal support. The high prevalence of the disability also warrants considerable attention. It has been estimated that of the 416 million children in India, about 5-15% have LD. It is also reported that at least five students in an average classroom are affected with this disability (Kamala, 2014). However, children with LD have been bluntly condemned as dull, lazy, and this neglect has been resulting in chronic scholastic backwardness, detention in class and even dropping out of schools in rural areas. The problems are not restricted to academics but extend to child’s quality of life, peer and family relationships, social interactions and self-image. Studies up till 2010 on teacher’s awareness of the disability indicate a general lack of awareness and understanding of the disorder in the school teachers (Saravanabhavan & Saravanabhavan, 2010). Lately there has been an optimistic rise in the awareness among the professionals including educationalists, psychologists and pediatricians but a wave of awareness has yet to traverse beyond the professionals and reach the general public.
At present, the country’s socio-cultural structure, educational system, lack of government recognition, lack of public awareness, highly demanding remediation methods all seem to be unfavorable and stressful to the parents and the children with LD.

1.2 Contemporary Yoga

Yoga is a traditional system of lifestyle which has its roots in Indian philosophy and had goals of spiritual attainment. Today it is practiced for physical and mental well-being. In this context, yoga is mostly associated with physical postures, breath control and meditation. Of the eight limbs of the age-old art of right living; Yama, Niyama, Asanas, Pranayama, Pratyahara, Dharana, Dhyana, and Samadhi, the three; Asana, Pranayama and Dhyana are the emblem of modern yoga. The teachings and research in yoga are predominantly centered on these three fold practice of yoga.

Modern yoga has undergone variations suiting the temperament and physical needs of the practitioners. There are 43 identified variations or schools of Yoga. Some of them are HathaYoga, Iyengar Yoga, Integrated Yoga Approach, Sudarshan Kriya Yoga, Nidra Yogasana, Viniyoga Yoga, Sahaja Yoga, Ashtanga Yoga, Yoga-based lifestyle modification, Silver Yoga, Kundalini Yoga, Yoga of Awareness, Vinyasa Yoga, Restorative Yoga, Kripalu Yoga, Dru Yoga, Chair Yoga, Bikram Yoga. As a result of expanding off shoots of classic yoga, borders between yoga and other similar practices are blurred. For example Transcendental meditation is usually seen as distinct from yoga, but is actually based on yoga principles. In the same way, mindfulness-based stress reduction uses yoga postures, but is not commonly seen as a yoga intervention (Cramer et al, 2014). Hence, modern yoga is an umbrella term used for the several variations each having its own distinct emphasis regarding the relative
content of physical postures and exercises (asanas), breathing techniques (pranayama), deep relaxation, and meditation practices.

1.2.1 Yoga as Complementary and Alternative Medicine

Though the therapeutic aspect of yoga is not described in any of the traditional systems of healing, except in the yoga sutras of Patanjali where the word vyadhi meaning disease is used in the list of disturbing factors of mind that are obstacles to spiritual liberation Gharote (1987), the modern yoga has found its way in the complementary and alternative medicine. The ministry of AYUSH in India, National Center for Complementary and Integrative Health (NCCIH), in the United States, National Health Service in the United Kingdom have been recognizing yoga as a safe and effective approach, in health and illness, for people of all ages. The therapeutic application of yoga started with the beginning of laboratory experiments done on the yoga practitioners in the early 90s. The first systematic medical application of yoga started in India in 1918 at the Yoga Institute at Versova near Mumbai, and the Yoga Institute at Santa Cruz. This was soon followed by the clinical work at the Kaivalyadham Yoga Institute in Lonavala under Swami Kuvalyananda in the 1920s. The early researches on the psychophysiological effects of yoga practice were published in the first scientific journal devoted to scientific investigation into yoga called Yoga Mimamsa. Subsequently, yoga therapy has proliferated in India with the establishment of yogic hospitals and clinics, notably the Swami Vivekananda Yoga Research Institute near Bangalore (SVYASA). (Khalsa, 2004).

1.2.2 Increasing interest in Yoga research

A 2014 review article stated that the number of Yoga research articles published has been constantly rising since the 1970s and a large rise is seen post
millennia (Cramer et al, 2014). The total number of studies published in 2014 was three times as high as in 2010. 86.9% of the articles available were published after the year 2000 and the maximum of them were published between 2010 and 2012. Randomized Control Trials on yoga were published from 23 countries some of which include India, USA, United Kingdom, Australia, Iran, Germany, Canada, Brazil, Japan, Taiwan, China, and Korea.

Research on the effectiveness of yoga has been done on various population including general, student, employee and patients with specified medical conditions. Yoga as intervention has been tested on various conditions like Breast cancer, Asthma, Depression, Type 2 diabetes mellitus, Chronic low back pain, Hypertension, Pregnancy, Schizophrenia, Menopausal symptoms, Multiple sclerosis, Metabolic syndrome, Stress, Coronary artery disease, COPD, All cancer types, Chronic neck pain, Eating disorder, Fibromyalgia, Heart failure, Menstrual irregularities, Osteoarthritis, Overweight/obesity, Smoking, Substance abuse and Others. Of the 312 studies reviewed 46.4% of studies were reported from India and 26.8% were reported from the US. 84.6% studies included adults (18-64 years), 33.7% involved older adults (≥65 years) and 9.9% were with children (<18 years). (Cramer et al, 2014).

1.2.3 Increasing acceptance by general public

A study conducted by Yoga Journal and Yoga Alliance in 2016 estimated that more than 36 million people practice yoga in the US and 80 million people are likely to try yoga in the near future. (http://www.yogajournal.com/yogainamericastudy/). Apparently, the reason for this rise in popularity of yoga and yoga as therapy among general public and the researchers is the increasing incidence of chronic lifestyle diseases, which the mainstream health care systems are failing to adequately address and yoga being a mind-body system promises to serve as a preventive intervention.
The popularity and global acceptance of yoga is marked by the declaration of the International day of Yoga by The United Nations. The United Nations stated its aim is “to raise awareness worldwide of the many benefits of practicing yoga” (www.un.org/en/events/yogaday/).

1.2.4 Yoga for LD

Yoga’s relaxing effects on the body and mind, effects on the cardiovascular, pulmonary, musculoskeletal, autonomic nervous system in promoting general wellbeing is well acknowledged. Its effects on specific clinical conditions are the popular research interest today. Previous studies conducted on children with mental retardation & attention deficit hyperactivity disorder using yogic practices have yielded positive results. But there were no published studies where yoga was tried as an intervention on children with LD when this research was commenced. Nor such studies have been reported till date, to the best of my literature search in Google Scholar, PubMed, ERIC, Shodha Ganga, & Mysore University e-library, etc. Hence in the preset study, an attempt is made to evaluate the effects of yoga on the cognitive and behavioral variables of children with LD.