CHAPTER - 3
PROBLEM AND HYPOTHESES

Learning disability is an emerging, dynamic and expanding field. Learning disabled people are found almost everywhere across all ages, socio-economic status and different races (Keogh and Sears, 1991). These children may have problems ranging from mild to severe. When compared to other handicapping conditions, learning disabilities are the most mysterious and vague. These children are not able to acquire the basic skills of reading, writing and arithmetic from regular classroom instructions. They show difficulties in basic psychological processes responsible for listening, speaking, reading, writing and arithmetic (Kirk, 1962). LD associated behaviors include short attention span, hyperactivity, and impulsiveness. Learning disabled can also involve difficulties with organizational skills, perception (Hamill and Larsen, 1974), social interaction (Blalock, 1981). LD is lifelong (Mercer, 1991; Smith and Luckasson, 1995). For enhancing academic success of children with learning problems professional and parents make continuous efforts to seek more knowledge about the nature, characteristics and interventions of learning disabilities.

A variety of strategies are used to deal with specific learning disabilities. For example, Writing and reading problems are dealt by using strategies like TREE, PLEASE, SQ3R, and so on. But all these strategies need an in-depth understanding of the technique being used and expertise about how to use these strategies. An experienced understanding, interpretation and analysis is required. This is the limitation of these specialized techniques. Moreover, a trainer can easily afford to sit on for long hours and work hard in case of normal Ss, which is not so easy in case of mentally retarded and learning disabled subjects. These subjects can not respond to such strategies in a way that may lead to a fast success. There is a need to look for some simple strategies, which do not require many skills, as the experts dealing with such sects of population already need to master a lot many of the other skills. In order to maintain the patience and hold consistent attention of the people dealing with handicapped population, an easy to administer, and an economic therapy in terms of time, effort and money should to be searched. Negative air ions could be one such way.
Ions are small particles in the air around us all the time. Of these small ions are being regularly inhaled by us. The air includes two polarities of ions i.e. positive and negative. Both are present in the air, but their concentration or ratio changes from time to time and place to place having marked biological effect on plants, animals and human beings. There are studies showing a variety of physiological and psychological effects of negative and positive ions on different species. Positive ions have been shown to have negative effects on the health, performance and behavior of the animals and human beings (Slote, 1961; Halcomb and Kirk, 1965; Krueger, 1976; Sulman, 1980, 1984) including asthma, breathlessness, migraine, lethargy, low energy levels, lack of concentration, attention and poor memory and cognitive performances, etc.

On the other hand negative air ions have been shown to improve the health, performance and behavior. To summarise the effects of negative air ions as discussed in chapter 1, these (a) help sufferers of insomnia, migraine (David, 1962; Sulman, Levy, Pfeifer and Superstine, 1975), eczema, headaches, tiredness and general feeling of malaise (b) increase the speed of healing burns (David et. al, 1962) (e) reduce pain including post-operative pain (d) enhance the body's absorption and utilization of oxygen (e) Enhance concentration, alertness and performance (Nakane, Asami and Yamada, 2002; Batra and Kumar, 2006) (f) Reduce the effects of passive smoking (Tokai, 1985); (g) prevent from allergies (h) destroy airborne bacteria and viruses (Krueger and Reed, 1976) (i) reduce respiratory rate (j) enhance the metabolism of water-soluble vitamins (k) improve sense of well-being (l) lower body temperature (m) increase the rate and quality of growth in plants and animals (Krueger, Kotaka and Andriese, 1962) (n) Increase work productivity (Hawkins, 1982) and (o) Enhance immune system.

However, the studies related to special sects of population are very limited. A series of studies was conducted by Morton and Kershner (1984, 1987, 1990). These studies indicated (i) enhanced incidental recognition memory for three groups of subjects (normal achieving, learning disabled and educable retarded children); (ii) normalization of the right ear advantage (REA) on a dichotic listening task for learning impaired subjects; and (iii) a counter priming effect on the dichotic listening task, also for the learning impaired subjects.
To the awareness of investigator, no any other such studies have been conducted, whereas it would be a highly economic therapy in terms of time and effort, regarding human resources and in financial terms also. There is no expertise required in giving this exposure. At the same time the implication is large and vast as any help to learning disabled will have and far reaching consequences. Therefore, it would be worthwhile to explore the effects of negative air ions on learning disabled in order to help the world of knowledge in generating and establishing the negative ions as a therapy for learning disabled. So the following problem was formulated.

Problem:
To study the effect of negative air ions on the learning and memory of the learning disabled population.

Objectives:
1) To find out whether the negative ion exposure helps in enhancing acquisition amongst normal and learning disabled subjects.
2) To find out whether the negative ion exposure helps in enhancing retrieval amongst normal and learning disabled subjects.
3) To compare the degree of enhancement in learning disabled and normal population due to negative ion exposure.
4) To find out the residual effect of negative air ions.

Hypotheses:
1) The acquisition would be better amongst subjects exposed with negative ions.
2) The retention would be better amongst subjects exposed with negative ions.
3) The degree of enhancement would be more amongst the normal population.