

CHAPTER V

SUMMARY AND CONCLUSIONS

This study was intended to explore the extent to which an interventional programme that can help the participants to learn the basic yogic squats to enhance their cognitive abilities. Jois, Srikanth, D’Souza and Lancy (2018) concluded that Super Brain Yoga improves Memory and Concentration. Master ChoaKoK Sui (2005) reported that when students are under stress in school, they requested permission from their teachers to practice the Super Brain Yoga. The students reported that the psychological stress was reduced and they were able to concentrate on their studies more effectively.

This chapter presents the summary of the investigation, the key finding, conclusions based on the interpretation of the data generated by the research and implications of this investigation. It further, lists the limitations of the study and scope of future research.

Objectives

- To assess the Cognitive Abilities of the Learning Disabled Children
- To Enhance the Level of Cognitive Abilities among the Learning Disabled Children
- To Enhance the Level of Intelligence among the Learning Disabled Children
- To Find out the Efficacy of Intervention in enhancing the cognitive abilities among the Learning Disabled Children

Hypotheses

The following research hypotheses would be tested during the research:

H 1, “There will be significant difference between Before, After and Follow-up phases in Raven’s Coloured Progressive Matrices among the Learning Disabled Children in the Experimental Group”

H 2, “There will be significant difference between Before, After and Follow-up phases in Raven’s Coloured Progressive Matrices among the Learning Disabled Children in the Waitlist Control Group”

H 3, “There will be significant difference between Before, After and Follow-up Phases in Visual Scanning of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Experimental Group”

H 4, “There will be significant difference between Before, After and Follow-up Phases in Visual Scanning of Delis Kaplan Executive Function System Trial making Test among the Learning Disabled Children in the Waitlist Control Group”

H 5, “There will be significant difference between Before, After and Follow-up Phases in Number Sequencing of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Experimental Group”

H 6, “There will be significant difference between Before, After and Follow-up Phases in Number Sequencing of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Waitlist Control Group”

H 7, “There will be significant difference between Before, After and Follow-up Phases in Letter Sequencing of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Experimental Group”

H 8, “There will be significant difference between Before, After and Follow-up Phases in Letter Sequencing of Delis Kaplan Executive Function System Trail Making Test among the Learning Disabled Children in the Waitlist Control Group”

H 9, “There will be significant difference between Before, After and Follow-up Phases in Number Letter Sequencing of Delis Kaplan Executive Function System Trail Making Test among the Learning Disabled Children in the Experimental Group”

H 10, “There will be significant difference between Before, After and Follow-up Phases in Number Letter Sequencing of Delis Kaplan Executive Function System Trail Making Test among the Learning Disabled Children in the Waitlist Control Group”

H 11, “There will be significant difference between Before, After and Follow-up Phases in Motor Speed of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Experimental Group”

H 12, “There will be significant difference between Before, After and Follow-up Phases in Motor Speed of Delis Kaplan Executive Function System Trial Making Test among the Learning Disabled Children in the Waitlist Control Group”

H 13, “There will be significant difference between Before, After and Follow-up Phases of Verbal Fluency of Delis Kaplan Executive Function System among the Learning Disabled Children in the Experimental Group”

H 14, “There will be significant difference between Before, After and Follow-up Phases of Verbal Fluency of Delis Kaplan Executive Function System among the Learning Disabled Children in the Waitlist Control Group”

H 15, “There will be significant difference between Before, After and Follow-up Phases of Design Fluency of Delis Kaplan Executive Function System among the Learning Disabled Children in the Experimental Group”

H 16, “There will be significant difference between Before, After and Follow-up Phases of Design Fluency of Delis Kaplan Executive Function System among the Learning Disabled Children in the Waitlist Control Group”

H 17, “There will be significant difference between Before, After and Follow-up Phases of Colour Naming of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Experimental Group”

H 18, “There will be significant difference between Before, After and Follow-up Phases of Colour Naming of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Waitlist Control Group”

H 19, “There will be significant difference between Before, After and Follow-up Phases of Inhibition of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Experimental Group”

H 20, “There will be significant difference between Before, After and Follow-up Phases of Inhibition of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Waitlist Control Group”

H 21, “There will be significant difference between Before, After and Follow-up Phases of Inhibition and Switching of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Experimental Group”

H 22, “There will be significant difference between Before, After and Follow-up Phases of Inhibition and Switching of Delis Kaplan Executive Function System Colour Word Interference test among the Learning Disabled Children in the Waitlist Control Group”

H 23, “There will be significant difference between Before, After and Follow-up Phases of Word Context of Delis Kaplan Executive Function System among the Learning Disabled Children in the Experimental Group”

H 24, “There will be significant difference between Before, After and Follow-up Phases of Word Context of Delis Kaplan Executive Function System among the Learning Disabled Children in the Waitlist Control Group”

Population and Sampling Frame

Location of the Study

The location selected to conduct the study was Vidya Vikasini Matric Higher Secondary School and another School (Requested not to mention the school name), Coimbatore.

The reason for selecting this area was:

- Availability of the school students required for the study
- Willingness and Cooperation of the school students
- Permission and Facilities provided by the authorities to conduct the action research.

Sampling Procedure

Simple Random Sampling was the criteria for the selection of the school students. From the abovementioned schools of Coimbatore, Tamilnadu, 60 Girls and Boys (8-12 years), those include children with Learning Disability. The Phases I, II and III of the study involved 30 participants were grouped in the Experimental Group and 30 Participants in the Waitlist Control Group. Formal Written Informed Consent were taken from all the participants’ parents.

Inclusion Criteria

- The age range between 8-12 years
- The participants with average level of Intelligence were selected
- The participants with academic problems were selected.

Exclusion Criteria

- The participants above 12 years were excluded
- Adolescents were excluded
- Learning disabled with High Intelligence were excluded
- Participants who performed well in academics were excluded

Research Design

The research design used were “Before, After and Follow-up with Waitlist Control Design”. The Primary data was obtained from the school students through Standardized Questionnaires and Schedules. The data collection for present research was done in three phases.

Phase-I: The phase-I included selection of students from Vidya Vikasini as the participants with Borderline Learning Disabled in and around Coimbatore

Phase-II: In the phase-II participants who are assigned in experimental group were assessed for their baseline cognitive abilities using the psychological tools

Group-I: Experimental Group with Intervention

Group-II: Waitlist Control Group without Intervention

Phase-III: In the Phase-III, after the Interventions, all the participants in the experimental group were reassessed for their cognitive abilities using the psychological tool; participants will undergo reassessments using the same psychological tools as follow-up. The effectiveness of the interventions was ascertained by comparing the groups Before intervention, After interventions and follow-up assessment of cognitive abilities.

Tools of Investigation

The tools used in the study were:

- I. Informed Consent Form
- II. Case Study Schedule
- III. Raven's Coloured Progressive Matrices
- IV. Delis Kaplan Executive Function System

**Case Study Schedule/ Personal Profile Sheet (Yogeswarie,Dr.S.Gayatridevi, 2018)
(Annexure-I)**

Case Study Schedule was used to collect the required information about the Learning Disabled students; it was used to collect the demographic details of the participants such as Name, Age, Education, Birth Order, Family Type and Place of Living.

Raven's Coloured Progressive Matrices (Annexure- II)

Raven's Coloured Progressive Matrices were designed for younger children, the elderly and people with moderate or severe learning difficulties, this test contains SET A and B from the standard matrices, with a further set of 12 items inserted between the two, as Set Ab. Most items were present on a coloured background to make the test visually stimulating for Learning Disabled Children. However, the very last few items in Set B are presented as Black and White. Ravens.J.C., 1936.

Delis Kaplan Executive Function System- DELIS KAPLAN EXECUTIVE FUNCTION SYSTEM (Annexure - III)

Delis Kaplan Executive Function System is the first Nationally Standardized sets of tests to evaluate higher cognitive functions in both children and Adults. Delis, Kaplan, and Kramer, (2001). From Delis Kaplan Executive Function System Trial Making Test, Design Fluency, Verbal Fluency, Colour Word Interference, Word Context test were selected in order to age of the Learning Disabled Children

Trial Making Test

The primary part of Trial Making Test (TMT), Trial Making Test A requires the subject to rapidly sequence numbers from 1 through 25, with the score being the time to complete the task. The secondary part, Trial Making Test B is a more difficult cognitive flexibility task requiring the subject to follow a sequential pattern while shifting cognitive sets, sequencing from 1 to 13 while switching Between Before, After

and Follow-up Phases of numbers and letters, with the score being the time to complete the task” (Kaplan, 2001)

Verbal Fluency

The Delis Kaplan Executive Function System, “Verbal Fluency test is comprised of three testing conditions: Letter Fluency, Category Fluency and Category Switching. The Verbal Fluency measures multiple aspects of verbal behaviour productivity and cognitive flexibility. It evaluates effectiveness of novel and semantic search strategies. The process approach enables further evaluation of self monitoring. Kaplan, 2001.

Design Fluency

The Delis Kaplan Executive Function System Design Fluency Test is typically assumed to assess planning, cognitive flexibility and fluency in generation of visual patterns above and beyond contributions from motor speed. Kaplan, 2001.

Colour Word Interference Test

The Delis Kaplan Executive Function System Colour Word Interference Test was designed to improve upon the Stroop task by including an inhibition/ switching trial, which was designed to be more difficult than the inhibition trial in terms of time to completion and number of errors. Kaplan, 2001.

Word Context Test

The Delis Kaplan Executive Function System Word Context Test is a means of evaluating executive functions in the verbal modality and assessing such skills as deductive reasoning, integration of multiple bits of information, hypothesis testing and flexibility of thinking. Kaplan, 2001.

Intervention Phase

Thoppukaranam (Super Brain Yoga) will be used in the study.

Thoppukaranam

Thoppukaranam is otherwise called as super brain yoga, which has empowered individuals to accomplish psychological, physical and spiritual wellbeing. One such traditional practice is Thoppukaranam (Super Brain Yoga) from ancient Indian schools. It was accepted from the ancient Gurukalam Education systems. It is also called as “Uthaik-Bathaik” in hindi or in tamil “Thoppukaranam”. It is confirmed yogic practice for people who wish to perform the steps while offering prayers, rather than a sort of punishment in the classroom as is commonly known in the Indian educational system. The, “Thoppukaranam” (Super Brain Yoga) according to Hindu yogis, awakens the" brain's energy connections. Thoppukaranam (Super Brain Yoga) is a well known yogic procedure derived from the terms “Thorpe” meaning “hands” and “Karanam” meaning “ears”. It is thought to increase mental attention in order to stimulate the sections of the brain, resulting in a better sense of awareness.

Benefits of practicing Thoppukaranam

- Thoppukaranam (Super Brain Yoga) synchronises and co-ordinates alpha thinking waves, it also stimulates and activates the cerebrum
- It gives you a new perspective and it relieves tension and stress
- Cerebrum has a direct impact and results in sharp response
- It controls the intimating drives
- Practicing Thoppukaranam improves concentration and develops mental power
- Spirituality and Mental growth are enhanced by this exercise

Duration

Repeat this for 15 to 21 times daily and slowly increased to 15 minutes per day.

Statistical Analysis

The data collected during the before, after and follow-up phases was analyzed using statistical package for social sciences (SPSS) 20th version. Mean, Standard Deviation from Descriptive Statistics, Repeated Measures ANOVA, Bonferroni Test of Multiple Pairwise Comparison Tests were used to find out the significant differences in the dependent variables among the three phases of the research.

The Major Findings of the Study

The results of the study showed that the intervention to the Learning Disabled Students were very much effective. Super brain yoga (Thoppukaranam) incorporates a sequence of steps that activate brain cells and works on the cognitive components of the mind. It allows energy to move upward from the lower chakras to the crown and forehead chakras. This technique has changed over time. It was originally created to boost intelligence by combining ear acupressure with it.

As the name implies, Thoppukaranam (Super Brain Yoga) focuses on the brain, while yoga represents the union of body and spirit. As a result, it tries to assist the practitioner in working in harmony with his or her mind, body and spirit. Super Brain Yoga consists of a set of steps that are designed to activate brain cells. It is a mixture of ear acupressure to boost one's intelligence. The right and left hemispheres of the brain are balanced through Super Brain Yoga, which combines breathing and acupressure. The activity is easy to pick up, takes only a few minutes to master and can be done anywhere.

The technique of Super Brain Yoga is safe to be inculcated in one's routine from earlier ages of life and to continue practicing till last days of their life. It has numerous benefits when performed on a daily basis. An individual's IQ, creativity and overall performance can all benefit from optimal brain functioning. Super brain Yoga promotes a free flow of energy from the brain to the energy centres also known as chakras, and is based on ancient yoga and acupuncture principles. Practicing Super Brain yoga for 15 minutes can help you reach a thoughtful, reflective alpha brainwave state. According to Nagaraj (2019) super brain yoga increases creativity, calms the mind, improves cognitive function, reduces stress, eliminates depression, improves balancing the body while walking, levels of energy is enhanced.

Conclusions

The following conclusions are drawn from the present study after analyzing the results through appropriate statistics.

- Super Brain Yoga (Thoppukaranam) was found to be effective in increasing the intelligence of the Learning Disabled Students.

- Intervention was found to be effective in increasing the Concentration Level which is used widely for Visual Scanning among the Participants in the Experimental Group.
- Tendency to sequence the Number was also improved where attentional control and working memory was enhanced for those who practiced Super Brain Yoga (Thoppukaranam)
- Super Brain Yoga (Thoppukaranam) had contributed significantly in the development of Sequencing letter and number.
- Verbal Fluency, Design Fluency and Word Context were improved and which in turn helped the students to perform better in their language classes.
- Learning Disabled Students Vision was developed and improved, which in turn gave a better score in Post and Follow-up Phases among the participants who participated in the Intervention.

Implications

- The findings of the present research will enable policy makers in the school education to bring out such intervention programme mandatory to help children perform well in their academics.
- Screening of children for learning disability should be made mandatory in schools
- These results can be shared with the social media to help Parents to understand about Thoppukaranam
- Continuous practice of Super Brain Yoga (Thoppukaranam) will give 100% result in overcoming the learning disability
- Awareness about intervention programme among teachers will have long lasting effect since they will continue to provide such a positive attitude to upcoming generations and help them overcome their problem.

Recommendations

- The Government of India should create a database of the learning disabled children and provide a good infrastructure.
- The Government of India should create awareness about the benefits of Super Brain Yoga and it does not belong to Hinduism.

- The Teacher Education Department should bring out a module in understanding, dealing reporting and counselling the students.
- Appointing Special Educators in all the schools should be made mandatory
- Creating Awareness among Parents in the society

Limitations

- The intervention programme was conducted for a short period for a specific group, whereas if the training programme was extended for many other schools, students would be benefitted.
- Only one follow-up was conducted after three months of intervention programme, whereas the second and third follow-up could have helped to understand the effect of the intervention over a longer period and the sustainability of the intervention
- The experimental design of the present study limited to the inclusion of lesser number of participants where a large number of children would have got the benefit of the intervention.
- To conduct intervention study among the children, there must be a permanent staff and permanent counsellor as the researcher is from outside the school system

Suggestions for further Research

- Studies should involve parents and teachers as participant observer in order to carry on the benefit of the training continuously
- Further studies may include the peer trainers and find out the effect of the intervention
- A longitudinal study with students from all age groups should be experimented with.
- Studies should be conducted on teacher awareness and imparting ways to manage learning disability need to be assessed.
- To use qualitative or mixed methods designs to better understand the complex nature of learning disability.