TRAINING PROGRAMME IN LEARNING DISABILITIES FOR TEACHERS

A Thesis

SUBMITTED TO THE

TILAK MAHARASHTRA VIDYAPEETH PUNE

FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

In Education

Under the Board of Education Studies

BY

PINAZE PERCY DUBASH

(Registration No. 19512005971)

UNDER THE GUIDANCE OF

DR. SMITA PHATAK

DEPARTMENT OF EDUCATION

2017

Undertaking

I, **Pinaze Percy Dubash**, am the Ph. D Scholar of the Tilak Maharashtra Vidyapeeth in education subject. Thesis titled,

Training Programme in Learning Disabilities for Teachers

under the supervision of **Dr Smita Phatak**,
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Signature :

Address : "Ashiana" Survey No. 86, Lohegaon-Wagholi Road, Lohegaon, Pune-47

Ph.No. : 99602 91205 **e-mail :** pinazeism@gmail.com

Date : 19th December 2017 **Place :** Pune

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It is certified that work entitled

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Dr. Smita Phatak
Research Guide

Acknowledgement

Praise the bridge that carried you over. ~ George Colman

Firstly, I thank God, the Almighty, for blessings throughout my life, my research and its completion.

I would like to express my sincere gratitude to my guide Dr Smita Phatak for the continuous support through Ph.D study and related research, for her patience, motivation, and immense knowledge. Her guidance has been very helpful in time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D study.

My sincere thanks to Dr. Kamlesh Chaudhary for her insightful comments and encouragement, which prompted me to widen my research from various perspectives. Her expertise and valuable insights shared through this research study are indispensable.

I also thank Dr. Prithvish Nag, Dr. Sanjay Ayade for their opinions and feedback on the research . I would also like to thank Dr. Neelima Mehta for her guidance and support.

My gratitude to Tilak Maharastra Vidyapeeth, Dr. C.S. Yadav and all members of the PhD Department at Tilak Maharashtra Vidyapeeth for their help, through this study.

I take this opportunity to thank Mrs. Mrinalini Bhosale: Principal, Vikhe Patil Memorial School, Mr. Shalabh Nigam, Principal: Bal Bharti Public School and Mrs. Swati Chaudhari Ambre: Principal, The Dwarka School, for giving me the opportunity to train teachers from their respective schools.

There are always a number of people who get associated to this kind of work offering help and support, directly and indirectly: to each one of them, Thank you!

Last but not the least, I would like to thank my family- one of nature's master-pieces.

- My grand parents, Mr. Minoo Dubash and Mrs. Mini Dubash, who were with me in spirit.

- My parents, Mr. Percy Dubash and Mrs. Hilda Dubash for their encouragement and support through my life and nurturing my ambitions.
- My brother, Mr. Meherzade Dubash for being there always.
- My parents in-law Mr. Salil Mitra and Dr. Manju Mitra for motivating and constantly reminding me of my goals to be accomplished .
- Treading my way through this journey would never have been possible without the love, patience and unflinching support of my husband, Mr. Sanand Mitra through all the discussions and work, to meet deadlines. Thank you making me believe I am doing my best and that is enough! Thank you!

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CHAPTER 1
INTRODUCTION

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Chapter 1

Introduction

"If education is a fundamental right, then children with special needs also deserve an equal chance at pursuing their academic aspirations."

Jaya Mitra

Senior Head, The Oral School for Deaf Children

1.1 Introduction

Education today has a major issue and concern, 'An increasing number of slow learners and children with learning disabilities'. An earlier stage the detection of such problems in children usually have been over-looked by schools by not having examination for children upto age 8 or 9 years. Also, a large number of diverse factors contribute to the school's difficulties, such as overcrowded classrooms, poverty, traditional beliefs, shortage of experienced teachers, etc.

Acknowledging that such children require special education, with the help of which the difficulties arising from such disabilities can be overcome, a various number programmes were conducted for such children. However, for a long time, slow learners and children with learning disabilities have been educated separately, in separate classes or separate schools, with a prefixed notion that special education means separate education.

Further researches showed that when children with learning disabilities/special abilities, attended classes alongside children who do not have such disabilities, positive academic and social outcomes occur for all the children involved. This is what facilitated the evolution of the concept of inclusive education.

Thus, by placing children with or without difficulties, or disabilities together may or may not produce positive outcomes. Successful inclusive education occurs when there is ongoing advocacy, for successful inclusion, planning, support and commitment towards its implementation. The base thought for inclusion, stems from a deep desire

to serve society as a whole, instead of taking the easier way of benefitting a few. Inclusive education is based on the principles that -

- Each child and its family is cherished equally and has the rights to deserve the same opportunity and life experience;
- All children learn in different ways, the key is to give only as much help as needed;
- Inclusive education is a child's right, not a privilege.

1.2 Background

It is believed that education is one of the fundamental rights for every person/child. This also implies that the educational processes and systems should cater to the child's receptive capabilities, in the best possible manner. The teaching learning process has covered more ground in the past two decades, than it had since its inception. Earlier, owing to the lack of a better understanding, the educational system, the concept of a classroom, a general teaching system, etc., was formed/ based on the basic and prevalent best practices of the time. With the passage of time and a better understanding of the complexities within the teaching-learning system as well as the classroom dynamics, a varied category of modules were thought of and introduced into the educational teacher training system. These equipped the teacher trainees with a better grasp of the classrooms that they were to teach in. These tools enabled the teachers to effectively make the students understand the subject at hand.

A paradigm shift within this system occurred around the late 1800's, around 1877 to be precise, when the first observations about learning difficulties were discussed in the academic research world. Though there was no considerable headway made into this section till the 1960's, once academic research showed a significant prevalence of learning difficulties within the general classroom, accommodations, techniques, strategies and other support systems were made a part of standard teacher training programs.

It was widely agreed that these students needed academic competence, adequate classroom survival skills, defined as *non-academic behaviours* such as attending class daily, arriving promptly at class, being prepared for daily lessons, meeting assignment

deadlines, addressing teachers appropriately and following written and oral work. These students are smart and intelligent but have difficulty with academics such as reading, writing, spelling and mathematics, leading to emotional and behaviour problems that leave teachers and parents puzzled. This invisible barrier that comes in the way of their learning is known as **L**earning **D**isability **(LD)** or **S**pecific **L**earning **D**isabilities **(SLD).** A learning disability cuts across all ages and socio-economic classes. It is not a type of mental retardation as sometimes mistakenly believed, in fact, they have average or above average intelligence.

In India, even though there has been an inherent following of the global research on learning difficulties, the teacher training programs remained by and large, unaffected by these developments. It has been a singularly interesting journey in observing the inclusion or omission of course material, and its extent, thereby implying its importance, within the Indian education system.

In 1995, the *"Equal Opportunities and Rights of Persons with Disabilities ACT"* 1995, Rule 26, was introduced. This act spoke about the *"education of children with disabilities up to the age of 18 years in an appropriate environment"*. It was landmark legislation for the disabled in general. But, unfortunately, **L**earning **D**isability is not mentioned anywhere in this Act. With the introduction of the **S**arva **S**hiksha **A**bhiyaan, in 2000-2001, a sea of change was observed with programs, projects, policy and educational systems, which brought the concept of inclusion, special needs, learning difficulties/disabilities, to the forefront.

1.3 Inclusion and Inclusive Education

Inclusion came as a literal opposite to exclusion, which means to exclude. In this context, it was meant as the exclusion of children with difficulties/disabilities/special needs, from the general classroom. At the onset of introduction of the Sarva Shiksha Abhiyaan, in 2000-2001, there was no precedence to inclusion. Exclusion was the only practice being carried out. Any child with physical or mental difficulties/ disabilities/special needs, was excluded from the general school and if the school was equipped with a special counsellor, then from the general classroom to the special studies section. This practice of exclusion was segregating the target students into

individuals who were gradually finding themselves isolated and alone. Interaction with peer being crucial for development, exclusion hampered their growth to their full potential and restricted their learning process. Also, of vital importance, is their becoming anti-social, owing to the isolation that they faced during a major part of their day-to-day lives.

Inclusion, as the word itself, brought a revolutionary change to the thought process as well as the acceptance standards of general schools. The school, as a whole, needed to alter their existing mindsets about allowing students with mental/physical/special needs, to be a part of the general classrooms as school under the paradigm for education is an integral part of a child's development. This included teaching, non-teaching staff along with students and parents. For the success of such ideology of inclusive education, the schools have to undergo numerous profound transformations in organisation. For a start, they would need supportive educational services.

Even though there has been a conscious awareness about severe mental and physical disabilities, there has been very little understanding about the breakdown in the learning process, for a few students, which involves listening, thinking, perceptive memory and expression. This condition does not have a visible disability, and so may also be known as an invisible handicap or hidden handicap. This is one of the conditions that the German neurologist, Adolf Kussmaul, termed as **"word blindness"** for a condition of *".....complete text blindness, even though the powers of the sight, the intellect and the power of speech, are intact…"*, in the year 1877. This was the first public mention of Learning Disabilities (LD).

1.4 Learning Disabilities

Learning Disabilities are process related problems, which have their base in the neurological system. "*These processing issues have the ability to interfere or alter the learning of basic life-skills such as academic reading, writing and/or mathematics. They can also interfere with higher level skills such as organisation, time planning, abstract reasoning, long or short term memory and attention. It is critical to understand that Learning Difficulties/Disabilities can severely affect a person's life*

beyond the academics and can deeply impact family, friends and working relationships." (Yu, Ally, Tsinakos, 2016)

It is known that since there are typical difficulties with reading, writing, math, etc. are problems which have been easily identified and which are encountered during the early schooling years. The common Learning Disabilities, diagnosed during those years have these symptoms and manifestations. However, it is known that quite a few individuals do not receive a thorough evaluation until they are in post-secondary education or adults in the workforce, by which time, it is too late and an advanced stage of mental setback has already set within the individual. Similarly, there are quite a few people with Learning Disabilities, who may never be evaluated and have to undergo a rather tough life, without knowing a reasonable base for their difficulties with scholastic activities and similar difficulties with jobs or in the relationships they have with their families and friends.

Learning Disabilities must, simply not be confused with simple and early learning issues which have been mainly the result of visual, audio, or motor handicaps occurring in individuals; or of mental retardation; or of emotional disturbance; and of environmental, cultural or economic disadvantages.

Speaking in general, people who are diagnosed with Learning Disabilities mostly, possess average or above average intelligence. There, often, appears to be a rather large gap between the capability of any individual and what they actually achieve, which becomes a prime reason, why Learning Disabilities are usually known as **"hidden disabilities"**. It is because the affected person appears to be absolutely **"normal"** along with being very bright and a person with high intellect, although he/ she may be incapable of demonstrating the skill levels expected from someone of a similar age group.

Learning Disabilities are known to be a lifelong challenge, something which cannot be cured, treated or rectified. If there is adequate support and timely intervention provided to people with Learning Disabilities, they may achieve exceptional success in academics, at their workplace, in the different relationships, and in the society as a whole.

With the advent of the concept of inclusion, it is now a well understood and accepted fact that students with Learning Disabilities will continue to be in regular schools. They would need supportive educational services. A teacher has a unique challenge of modifying student behaviour in the right direction and the teacher should be willing to teach certain skills and strategies, directly or indirectly to their students who have Learning Disabilities. There are different types of Learning Disabilities, which affect different parts of the brain and its resultant functionalities. A combination of two or more of these, in different quantities, is what is known as co-morbidities.

These Learning Disabilities are:

1. **Dyscalculia** is the difficulty associated with mathematics. A lot of students without learning difficulties do struggle with math but dyscalculia makes even basic math concepts difficult for a teenager to understand. Someone with dyscalculia may struggle with memorisation of multiplication tables for example or have a hard time with operation signs (+, -, x, /). These individuals may have trouble counting in groups, such as by twos as well. People with dyscalculia may even have a difficult time with counting money and telling the time. To help students dealing with dyscalculia, it is important to address what difficulties they are having and how that makes them feel. With the teachers allowing these students having this difficulty/disability, some extra time to complete their assignments as well as examinations. Work on strengthening their math concepts. Another solution that can help ease the student's fears about math is to connect math to their lives. For example, if a student likes to cook, math plays an important role for measurements. Fostering good math skills and healthy attitudes is a start to help students cope with their learning disability.
2. **Dysgraphia** is often described as a learning difficulty/disability concerned with writing. Students affected by dysgraphia, often tend to have a messy and inconsistent writing. These students have trouble with the accurate copying of letters and words so taking down notes from the board can be frustrating. A few pupils may additionally, have spelling issues as well as some difficulty with the organisation of their writing to be coherent. The enlisted are the

various physical issues that come with dysgraphia, but furthermore the individual may also face complications with the expression and organisation of their thoughts on paper. One of the best methods of helping someone affected by dysgraphia is to have them verbalise their thoughts/ideas. Saying your thoughts out loud and organising them can help to get them down on paper. Another useful measure would be to allow for technology such as a computer or tablet in the classroom as this will make writing and note taking much less stressful.

3. **Dyspraxia** affects motor skills both gross such as running and balance as well as fine such as drawing and writing. Individuals with this disorder have a hard time with their coordination and with movement. A sign that a child is having motor skill issues could be if they have hand-eye coordination problems. There is a significant communication gap between the brain and the limbs, in order to complete certain physical actions.

4. **Dysphasia and Aphasia** are language and communication disabilities. Understanding speech and speaking can sometimes be difficult for these individuals. In the academic environ, such difficulties can present significant issues to comprehend instructions as well as an unobstructed communication with teachers and peers. Speech therapy, speaking at a slower pace, and using drawing to explain can be helpful with individuals who have Dysphasia. Students with Aphasia can also benefit from speech therapy, using alternative communication methods such as writing or sign language, and using technology to aid in the difficulties faced.

5. **Auditory Processing Disorder** makes it very hard to distinguish different sound especially subtle differences. The sounds that these students hear may also be slowed down or sped up and that makes it difficult for them to repeat these words properly, let alone write or read them. To help a child, if they have this learning disorder, it makes a big difference to reduce background noise and allow for them to use a recording device at school so that they have a chance to listen multiple times.

6. **Visual Processing Disorder** affects an individual's faculty of visual perception such as the differences in various shapes, understanding of depth, missing a few words or entire lines in a text and severely jumbling letters and numbers. VPD creates issues for the person in both mathematics as well as reading, making it a frustrating experience for the affected person, dealing with this issue everyday. Enlarged print and special types of paper with bolder lines or tactile stimuli can be used to lessen the difficulties faced by students.
7. **Nonverbal Learning Disabilities** present a serious challenge in interpret ing social mannerisms like body language, voice tone and facial expressions. People affected with this difficulty/disability, often have a challenge making and retaining friends, and are often misunderstood. If the pupil is affected by this difficulty/disability he/she may, additionally, have trouble, dealing with abstract thinking and would tend to accept everything very literally and at face value. Something that can help reduce awkwardness for the child in social and school settings is to be sure the child is given very clear and concise instructions. It is also helpful to get the child to find friends who have similar interests and arrange one on one meeting in a familiar environment.
8. **Attention Deficit Hyperactivity Disorder (ADHD)** makes paying attention and sitting still extremely difficult. These individuals also may have a hard time controlling their behaviour. This makes it easy to fall behind at school, not because of a lack of intelligence but because paying attention is not an easy task. These children can focus better when they are given space to move around in and to be able to fiddle with things as they listen and learn. Focus on their strengths and things they do well to help them unravel their gifts. For professional help, behaviour therapy has been known to help symptoms.
9. **Autism Spectrum Disorders** are developmental disorders but they can affect the way a child learns. This spectrum encompasses a wide range of symptoms, some very severe to others being very mild. Social communication and interactions can be difficult for these individuals and may also have patterns of behaviour. Varying degrees of this spectrum have various effects on individual

and it is always best to consult a professional to fully understand the difficulties your child has.

Apart from all the Learning Disabilities mentioned above, the most common and the most frequently observed Disability is the Reading Disability, also known as Dyslexia.

Dyslexia is categorised as a reading difficulty. The brain interprets letter and numbers differently than most. The brain sometimes inverts, reverses or sequences the characters a different way than they are presented. For example, a person with dyslexia may see a “9” as a “6”, a “d” as a “b” or a “w” as an “m”. While reading, the letters may even look scrambled on the page. Sounding out words becomes a struggle when words are jumping all over the page. Yet another aspect of dyslexia that has the ability to affect a person, is when the person can see the written word accurately but his/her mind has a tough time reconnecting it to any meaning. Dyslexia can also affect written and oral expression. Working on decoding letters, complex vocabulary and making sure that what is being read is understood are all stepping stones to help student overcome dyslexia.

In the background research conducted, inclusive of review of related literature as well as establishing a premise to start the research, **Dyslexia** stood out from the rest, as the most common and frequently encountered Learning Disability. Some of the global figures are:

- 70-80% of the people with below average reading skills are most likely dyslexic.
- It is said that out of one in every five pupils, or on an average 15-20% of the total population, have at least one language based learning difficulty/disability. Dyslexia is known to be the most common of all the language based Learning Disabilities.
- It is understood that the percentages of general children who are at a risk for reading difficulty/failure are significantly higher in conditions of high poverty and populations with a language fluency issue, who attend ineffective schools. (Jegede, 2014)

- In minority and high poverty schools, 70-80% of children have inadequate reading skills. (Capella, 2008)
- According to the National Assessment of Educational Progress (NAEP) in USA, 38% of all fourth grade students are "below basic" reading skills. They are at or below the 40th percentile for their age group.
- Nationwide approx. 20% of the elementary school population is struggling with reading.
- National Center for Education in USA states that, 5% of all adults are "non-literate".
- 20-25% of all adults can only read at the lowest level.
- 62% of non readers dropped out of high school. (Cratty & Goldman, 1996)
- 80% of children with an IEP have reading difficulty and 85% of those are Dyslexic.
- 1/3rd of children with Dyslexia also have at least a mild form of AD/HD.

This was one of the major reasons that Dyslexia was chosen to be the Learning Disability in focus, for this study. In the contemporary classrooms, amongst the many challenges, disabilities in general, and Learning Disabilities to be more specific, have grown to be a major cause of concern due to their latent potential for growth in numbers and difficulty in early identification.

With the inclusive model of education, it is now a must, that the general education teacher is the main teacher responsible for the students' education, with the support and guidance provided by the special education staff. But the actual challenge comes when we understand that there is no training, let alone the understanding, of such problems, being imparted to the teacher trainees, who would be the teachers facing these issues in their classrooms.

1.5 The Learner: Profiling An Average Child With Special Needs

For a child with special needs, Learning Difficulties/Disabilities, to be more precise, the world is rather different. He/she, used to be the apple of their parents' eye till they went to school. Play school was good for playing but when it came to reading/writing,

it started getting uncomfortable. It is not because the teaching is not good, but because the child cannot express his/her difficulty, as he/she cannot understand what's happening, and the teacher feels the child is being a difficult student.

The teacher at this point, needs to know the symptoms of Learning Disabilities, in general, and Specific Learning Disabilities. Without these, the teacher feels as helpless as the child. With the child being as small, and the environ being completely unaccustomed to even trying to understand and accept his difficulties, it presents the child with a situation that he/she finds, difficult to cope with. Behavioural issues stem out as a reaction to these stimuli and such children are thus labeled as "difficult/ stubborn/arrogant, etc". For a child who has a delayed onset of these symptoms, the prognosis is difficult and different.

POOR is what defines the beginning of a child's first symptoms, when he exhibits a pattern which could be similar to those of a child with Learning Difficulties/ Disabilities. When the child continuously has a "poor performance" in academics, the teacher/counsellor recommends an informal and subsequently a formal battery of tests and then remedial education to supplement the present learning. But, for the child, he/ she is unable to understand, why he cannot study in the same class as the rest of his friends! Why is he being taught in a separate class with a different set of students? The experience can leave a traumatised scar on his childhood, and a promising career. This, exclusion, is what this programme is trying to eliminate, by making the teachers able enough to teach all the children in a general classroom environ, with an equal ease.

1.6 Government and Policies

At the Government level, it is looked at as both a health (disability) and education (**E**ducation **F**or **A**ll) issue. Any legal definitions adapt a quantified, medical and psychometric perspective towards disabilities. This makes a good point, in favour of a medical model of intervention, as compared to a society based rehabilitation programme. In the case of Learning Disabilities, the diagnosis has remained in many instances medical; any scheme for children with Learning Disabilities has had to include identification in a hospital. This could lead to inappropriate referral, with the

added danger of labelling and stigmatisation, it is more discriminatory than inclusive. In India, we are going through a crucial phase in the historical development of Learning Disabilities. As awareness about Learning Disabilities is just in its infancy, there is no stigmatisation attached. This is a great opportunity to create non-stigmatising processes to address the problem. For example, sending children to Hospitals and Psychiatric Institutions (to the lay person a "mental hospital") is more likely to lead to stigmatisation whereas assessment in schools after following thorough pre-referral processes is more children friendly.

The last decade of the 20th Century saw the enactment of three legislations for the rehabilitation and welfare of people with disabilities. All the three legislations, namely, The Persons with Disabilities Act, 1995; The Rehabilitation Council of India Act, 1992; and The National Trust Act, 1999 are comprehensive in spirit, and together deal with all aspects pertaining to rehabilitation, from prevention, training, employment, long-term settlement, human resource development and research, and documentation (SSA, 2003). Recently, cases have been cited where children with Learning Disabilities have been denied concessions at examinations. In response to the parents' petitions, the Mumbai High Court directed all schools in Maharashtra to abide by the guidelines for students with LD *(Times of India, 22nd July, 2006).*

The year 2009 was a landmark in itself, when The Right of Children to Free and Compulsory Education Act or **Right to Education Act (RTE)**, an Act of the Parliament of India, was enacted on 4th August 2009, which describes the modalities of the importance of free and compulsory education for children between 6 and 14 in India under Article 21A of the Indian Constitution. With its enactment, India was one of 135 countries in the world, to make education a fundamental right for every child once the act came to be implemented on 1 April 2010. The RTE Act provides for free and compulsory education to children in the age group of 6-14 years at elementary level in a neighbourhood school. The Government of India (GOI), has since then, structured the Sarva Shiksha Abhiyan (SSA) guidelines, with the provisions entailed in the Right of Children to Free and Compulsory Education Act, 2009 and thus, had committed an average spending of Rs. 2,31,233 crore, for implementation of the

combined RTE-SSA program during the five years (2010-2015), in partnership with the domestic states.

This does sound very good when you read it, but for educators working for and with students with Learning Disabilities, how does this act translate into actionable policy on ground! As it has been mentioned, Specific Learning Disabilities **(SpLD)** afflicts almost 5-15% of school-going children and is believed to be genetically inherited. Children with SpLD invariably fail to achieve school grades at a level that is corresponding with their intelligence. Their "academic problems" also have an adverse impact on their quality of life, viz. self-image, peer and family relationships and social interactions, etc. The cornerstone of educational management has always been remedial ("special") education. Owing to the central nervous system's higher plasticity in the early years, this should ideally begin early, i.e., when the child is in primary school. By using specific teaching strategies and teaching materials, a special educator formulates an **I**ndividualised **E**ducational **P**rogram **(IEP)** to reduce or eliminate the child's difficulties/deficiencies in specific learning areas identified during the child's educational assessment. Remedial sessions are necessary twice or thrice every week for a few years to achieve an average academic competence. However, even after adequate remedial education, subtle deficiencies in reading, writing and mathematical abilities may still persist.

Hence, SpLD needs to be suspected by school authorities early, when the child is in preschool or primary school (class standards I-IV), and conclusively diagnosed at least by the age of 8 years for corrective measures. Unfortunately, in our country, India, many children with SpLD often remain undiagnosed because of a general lack of awareness leading to chronic poor school performance, class detention and even dropping out of school. Against this backdrop, the implementation by the Government of India of the *Right of Children to Free and Compulsory Education Act, 2009 (RTE Act) since 1st April 2010* becomes quite significant, especially for educators, working with children having SpLD. This Act makes education free and compulsory to all children of India in the 6-14 years age-group, and it states that no child shall be held back, expelled or required to pass a board examination until completion of class standard VIII (Eight). This act ensures that children at a young age do not experience

class detention in any condition. It is common knowledge that class detention can lead to severe emotional stress in children, loss of self-esteem and behavioural problems such as withdrawn behaviour or even aggression. On the one hand, the RTE Act overall is indeed a great step forward as it will ensure that all children in the 6-14 years age group in our country, irrespective of their socio-economic background, will now be able to attend school. On the other hand, it may inadvertently cause great disservice to the educational needs of children with SpLD, who now constitute a considerable number of any classrooms.

By mandating that no child gets detained up to class standard VIII, it is likely that children with SpLD will get diagnosed fairly late in their careers. It is also, very likely that the school authorities will refer these children for assessment of their poor school performance to a Learning Disability clinic late (when they are in standards IX-X) or may not refer them at all. This would, in turn, mean that the crucial time period for "remedial education" will be lost and that these children would have lost the opportunity to largely overcome their disability. The management of SpLD in the, contemporary, more time-demanding setting of secondary school will now be based solely on providing provisions/accommodations. The delay in diagnosis would also cause significant psychological trauma to the child as well as the parents. The RTE Act in its present form thus, is not likely, to serve the cause of children with SpLD unless and until it is backed up by an amendment that mandates that children who are getting poor marks/grades, irrespective of their class standard, are referred to a Learning Disability clinic/centre/hospital to undergo an assessment of their academic difficulties. This amendment is an absolute necessity, as it would ensure that children with SpLD are diagnosed in time. It will also ensure that other causes of poor academic performance, such as attention deficit hyperactivity disorder, borderline intellectual functioning ("slow learners") and autism, are detected and addressed early. Developed countries such as the United States, which has previously implemented the philosophy of compulsory education, have mandated that every child who is getting poor marks or grades, also termed as "scholastically backward”, should be assessed so that the cause is diagnosed in time and an Individualised Educational Program is created to ensure that the child is able to achieve his/her full academic potential.

1.7 Teacher Training

As stated at the OSEP (Office of Special Education Programs) meet in November, 2001, *"We know that high quality classroom instruction is a way to meet many of the educational needs of individuals with learning difficulties"* (Cook L, et al., 2001).

Presently, the academic system has few schools that are equipped to cater to this segment of inclusion. While government schools tend to ignore them, some private schools take up the initiative to make their schools, inclusive. Some partial, some more than the others, but it is still very rare to see a fully inclusive school in India. These children require special attention and they can be slow learners. So, a teacher who has to deal with many kids in the classroom may not have adequate time to devote to them. It can be immensely helpful if the schools recruit special educators.

Such teachers are educated by the B.Ed training programme and in light of the massive figures of disabilities/differently abled students, a better understanding of the problem at hand is needed by them. Prima-facie, the B.Ed syllabus of the University of Pune (UOP), has just 1 unit for Inclusive Education. Included in the subject of "**Psychology of Development and Learning**", the syllabus enlists, the following:

- **Psychology of Inclusion**
    - Identification of children with special needs.
    - Need of special education.
    - Catering special education needs.
    - Concept of integrated and inclusive education.
    - Adjustment- causes of maladjustment, dealing with Child abuse and Child exploitation.
    - Developing Attitudes and competences for inclusion.

Subsequently the *Sarva Siksha Abhiyan,* SSA takes the dual approach, which has always been historically taken, towards the education of children with difficulties/ disabilities, by propagating a "multi-optional delivery system". It categorically brings

the concerns of children with disabilities, or those it terms as "**C**hildren **W**ith **S**pecial **N**eeds **(CWSN)**" under the framework of "inclusive education" (IE):

> *"SSA will ensure that every child with special needs, irrespective of the kind, category and degree of disability, is provided education in an appropriate environment. SSA will adopt 'zero rejection' policy so that no child is left out of the education system. (SSA, 2007:1)"*

The Sarva Shiksha Abhiyaan lists 8 priority areas of intervention for inclusive education:

1. Survey for identification of CSWN
2. Assessment of CWSN
3. Providing assistive devices
4. Networking with NGOs/Government schemes
5. Barrier free access
6. Training of teachers on IE
7. Appointment of resource teachers
8. Curricula adaptation/textbooks/appropriate TLM

Here it is noteworthy that of the priorities listed, majority on these focus on issues of access, and only the last three are associated with classroom based 'processes', which in essence are vital in determining the quality of the educational experience. Each of these priority areas has received varied degree of emphasis in planning, and in most cases there is significant lack of information to evaluate the worthiness and success of these initiatives.

There is currently no pre-service training offered to regular teachers' which familiarises them with the education of CWSN. (Singal, 2009) The focus is only on providing in-service training. Under SSA this training is varied and ranges from 1-2 days, 3-5 days or 45-90 day orientations. Analysis of the content of these training programmes highlights the very basic nature of the 1-5 days orientation, which covers merely issues of identification and management, but is the most preferred medium in preparing teachers. While the number of teachers undertaking the 45-90 days

foundation course has remained very low. As of 2005 less than 0.2 percent of all SSA teachers had been through this larger program (quoted in World Bank, 2007), raising concerns about the effectiveness of such programs impacting pedagogical practices. (Singal, 2009)

While there is lack of empirical research evaluating the effectiveness of these teacher training programs, various studies in the field suggest that teachers do not feel confident in teaching CWSN. Moreover, it can be argued that the model being adopted by SSA is further deskilling mainstream teachers by assuming that the educational needs of CWSN are not the primary concern of the general teacher, rather they need to be addressed by a resource teacher or indeed teachers in special schools. (Singal, 2009)

This deskilling of teachers is recognised in the **NCERT (2006)** paper which recommended that there is a need to,

> *"gear all teacher education programs (both pre-service and in-service) to developing the pedagogical skills required in inclusive classrooms"*,

the document goes on to categorically state that:

> *"Make the class teacher responsible for all the children in the class. In case special support is required on account of CWSN, this should be in the form of assistance to the class teacher (p.30)"*

Even though the quality of teaching is becoming a concern for all children (NCERT, 2007), and there is growing international research evidence to suggest that pedagogical practices adopted for children with disabilities are primarily good teaching practices for all children, the government continues to largely neglect this area. NCERT (2006) provides useful reflections when it notes that:

> *"In India, the concept of Inclusive Education has not yet been linked to a broader discussion of pedagogy (Anita, 2000) and quality education (Taneja, 2001). Any broad reform in education cannot be implemented without taking* 'the teacher' 'training colleges /programs', do not have enough details for the teacher trainee to comprehend the enormity of the challenge that they are likely to face, when they encounter a child who cannot read or write, or comprehend instructions,

> calculations, *the inclusion of learners with CWSN into consideration (p. 33)", (http://www.ncert.nic.in/new_ncert/ncert/rightside/links/pdf/focus_group/special_ed_final1.pdf)*

Thus, the researcher concluded that there is an inherent need to train trainee teachers, as well as in-service teachers, to understand the types, symptoms, identification and remediation of CWSN within the reaches of the general classroom. This in the future would enable inclusion in its truest sense, and enable the general teacher to effectively teach the entire class, together.

Ironically, if teachers were to spend time and energy teaching children with Learning Disabilities, teaching would automatically attain a high quality. In other words, children with Learning Disabilities would make better teachers of us all!

1.8 Need and Importance of Research

In the contemporary classroom scenario, there is very little support that exists for a general teacher to understand, let alone teach, a student with Learning Disabilities. It does sound rather overreaching, but it **is** an irony. Their interpretation of a child comes from their previous experiences with children, including any previous teaching experiences. So, their interaction with a child with special needs is life-changing. It is life-changing because, for the first time they cannot make a child understand what they want to communicate. Here is a child, who is unable to do the basic learning that other children have and this interrupts the primary communication channel, which is the backbone of the teaching-learning process. The teacher might feel compassion, confusion, empathy, which are rather positive emotions, but it is equally possible that the teacher might feel negative emotions such as anger, resentment, etc., which are emotions that any child doesn't deserve. For a teacher, it is imperative that the child receives a neutral yet warm treatment which enhances the learning experience. This is possible only when the rapport and understanding of the teacher and taught are excellent and the communication is unhindered yet trusted.

This process has undergone a radical change from how it was perceived and conceptualised. It has been optimised every year with new research adding to it, various ways in which education could be imparted to the students. But, the one-to-

one communication channel has been, by far, the most unchanged feature. Though it facilitates a rapid learning curve, it also presents a handicap, if the student or the teacher, cannot communicate via the traditional channel, which has been taught to them. Thus, to deal with situations like these, the teachers, would have to develop a method of alternative communications, such as accommodations, techniques, strategies, which would further help in keeping the communication channel open. This would benefit the general "normal" students as well as the students with Learning Disabilities. To, the normal student, these "accommodations", make things a little easier but the target group of students, i.e., the children with special needs, feels a world of a difference. They know and understand things better and are at par with the rest of the class. Apart from boosting their morale, this symbolises what the teacher has been trained for, imparting an uncompromised quality of education to all students, without a bias.

This specialized training, rather the understanding to deal with such students, is the missing part of the elusive, inclusive classroom. This training contains the identification, understanding and knowledge of the various types of Learning Disabilities. It also trains the teachers on how to deal with these students in a general classroom since the methods and ways to deal with these students is different from those for other students. Also, the Individualised Education Plan, commonly referred to, as the IEP, has been taught to the teachers. Not essentially the creation of IEP, but rather, the way it works and the way it should be read, to ensure effective implementation of the same.

To understand the present situation in the schools, it is necessary to have a look at the situation from the person who is the most accountable, towards the quality of teaching and students' performance in the school: the Principal. The Principal's perspective tells us an overview of the teacher's capabilities, the willingness of the institution for a change and the vision towards which, the institutional machinery is committed. This is easier said than done, because to gather a consensual research of school principals, needs them to allocate time, which is difficult, and to get a fairly large number to understand and obtain an average rating of where the trend is headed. This also required a fairly valid questionnaire/assessment instrument, which gathered most of

the data, without taking much time, and presented a demographically vivid picture to analyse.

The research further yielded a base guideline for the training program to be built on. The extent of depth, the training content should have, in order for it to benefit the teacher, gained significant insights from the Principal's perspective.

Prior to delivering this training programme, a pre-test questionnaire was administered to the target teachers, in order to understand their base knowledge and awareness about Learning Disabilities. A post test was then administered after the training program was over, to understand how much the teachers have grasped through the training program. In order to present a comprehensive and concise program, it had to be fine tuned in terms of its syllabus, timeline and deliverables, which is what the pilot study helped with.

This programme further enabled an infinitely better quality of life, education and employment for children with Learning Disabilities, facilitating a much better educated society. Further still, the programme enabled teachers to be better equipped to help and assist students and their parents to cope with the Learning Disabilities. This would help them in the future in early identification of students with Learning Disabilities and thus help in lowering the drop-out of students due to their inability to cope with studies as a result of their disabilities, thus enabling a higher, better and superior educated number of students to pass out of institutions.

1.9 Title of the Research

Training Programme in Learning Disabilities for Teachers

1.10 Statement of Problem

- To design, develop and test the effectiveness of a teacher training programme in Dyslexia.

1.11 Objectives of the Research

1. To understand the identification of students with Dyslexia in general schools, and find out the status of teaching these students with Dyslexia in general schools.

2. To develop a training programme in Dyslexia, for teachers teaching in general schools.
3. To implement the training programme developed, on target teachers teaching in general schools.
4. To find the effectiveness of the training programme in Dyslexia, for teachers teaching in general schools.
5. To establish the usability of the developed product- Training Programme in Learning Disabilities (Dyslexia) for Teachers.

1.12 Variables of the Study

1.12.1 Independent Variable: The Teacher Training Programme forms the independent variable of the research.

1.12.2 Dependent Variable: Teacher's scores in the pre-test and post-test.

1.12.3 Extraneous Variables: The following are the extraneous variables of the current research:

- Locality of the school of the teacher (Urban / Rural)
- Age of teacher
- Qualification of teacher
- Experience of teacher

1.13 Conceptual and Operational Definitions

1.13.1 Conceptual Definitions:

Training Programme

- Programs designed for training employees in specific skills .

  (https://www.entrepreneur.com/encyclopedia/training-programs)
- The systematic development of the knowledge, skills and attitudes required by an individual to perform adequately a given task or job. (Glossary of Training Terms, Manpower Commission, UK)

Learning Disability

- Learning Disabilities denotes a single but heterogenous group of disorders, manifested as significant difficulties in the use of basic academic skills like reading, reading-comprehension, writing, spelling, mathematics or language.

  (Dyslexia Decoded, by Bina Nangia)

- A learning disability is a neurological disorder. In simple terms, a learning disability results from a difference in the way a person's brain is "wired." (http://www.ldonline.org/ldbasics/whatisld)

Teacher

- A person who teaches, especially in a school.

  (https://en.oxforddictionaries.com/definition/teacher)

- A teacher (also called a school teacher or, in some contexts, an educator) is a person who helps others to acquire knowledge, competences or values.

  (https://en.wikipedia.org/wiki/Teacher)

Effectiveness

- An output of specific review/analyses (*e.g.*, the *WASC Educational Effectiveness Review* or its *Reports on Institutional Effectiveness*) that measure (the quality of) the achievement of a specific educational goal or the degree to which a higher education institution can be expected to achieve specific requirements.

  (Quality Assurance and Accreditation:A Glossary of Basic Terms and Definitions, UNESCO)

- The degree to which objectives are achieved and the extent to which targeted problems are solved.

  (http://www.businessdictionary.com/definition/effectiveness.html)

1.13.2 Operational Definitions:

In this study, the following definitions were used and termed operationally from the perspective of the researcher:

Training Programme

It refers to the procedures designed to equip prospective teachers with the knowledge, attitudes, behaviours and skills they require to perform their tasks effectively in the classroom, school and wider community with regards to Learning Disabilities with a focus on Dyslexia and will aim at the following aspects:

i) Introduction to Learning Disabilities

ii) Differences between slow learners, learning difficulties and Learning Disabilities

iii) Preparation of checklists

iv) Use of standardised tests for identification and assessment of students having Learning Disabilities

v) Modification of teaching strategies

vi) Help and assistance to parents of students having Learning Disabilities

Learning Disabilities

This means a condition in which a child with normal intelligence but whose performance is not at the level of his Intellectual abilities. It focusses on *Dyslexia,* which is a neurogenetic deficit related to reading and spelling processes. It is a language difficulty. It is known to specify difficulty in learning to read fluently and with accurate comprehension. This disability includes varying stages of difficulty with the most commonly required abilities such as phonological understanding/awareness, general phonological decoding, mental processing speed, orthographic coding, short-term auditory memory, essential language versatility/verbal comprehension, and/or rapid naming.

Teacher

Teacher, as referred to in this research, is a person, trained with either a D.Ed, and or, B.Ed. degree, providing formal and ongoing instructional education in the English subject for pupils from Grade 1 to Grade 5, carried out at a place of formal education.

Effectiveness

This would mean a gain in the post-test scores based on the knowledge test in Learning Disabilities after the implementation of the training programme.

1.14 Hypothesis

1.14.1 Research Hypothesis(H_1): There will be an increase in the post test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools.

1.14.2 Null Hypothesis(H_0): There will be no significant difference in the post test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools.

1.15 Assumptions

1. It is assumed that the principals have honestly replied to the questionnaire.
2. The teachers are not trained to teach students with Learning Disabilities.
3. The teachers teaching in general schools use the same method to teach normal students and students with Learning Disabilities.
4. It is assumed that all the experimental subjects have accurately and honestly replied to the pretest and post-test questions.
5. The teaching-learning process for children with Learning Disabilities in general classrooms can be improved through proper training of teachers.

1.16 Research Questions

1. What are the strategies used by teachers to deal with children with Learning Disabilities (**Dyslexia**)?
2. What programme can be developed for the teachers to teach students with Learning Disabilities (**Dyslexia**) effectively?
3. What aspects need to be considered to develop a training programme in Learning Disabilities, Dyslexia to be more specific?
4. What would be the response of teachers about the usability of the training programme in Learning Disabilities?

1.17 Scope

The coverage of this study is teachers, teaching English language in English medium schools in Pune and Bilaspur. The programme developed consists of all essential factors that give knowledge and information about Learning Disabilities, especially **Dyslexia**.

1.18 Limitations of the Research

1. The teaching method of the teachers cannot be controlled.
2. There is no control over the uptake and cognitive capacity of the teachers.

1.19 Delimitations of the Research

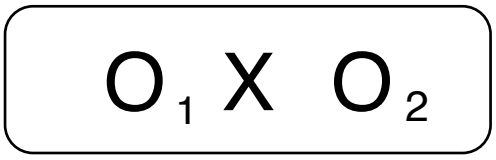
1. The study was be delimited to primary school teachers, teaching English in schools in Pune and Bilaspur.
2. The study was be delimited to examination of school teachers' knowledge about Learning Disabilities only.
3. The development and implementation of the teacher training program is delimited to inclusion, Learning Disabilities and **Dyslexia** in particular.

1.20 Tools Used

1. Questionnaire to find out the number of students with Learning Disabilities in general schools.
2. Questionnaire to find out the degree readiness of teachers, to reach beyond ordinary commitment levels, towards the education of such students.
3. A knowledge based questionnaire, prepared by the researcher, to analyse, the success of the training programme in imparting knowledge and skills to teachers, qualitatively as well as quantitatively.
4. Questionnaire to find out the usability of the teacher training programme.

1.21 Research Design

Single Group Pre Test - Post Test Design**.**



Key

X= Treatment

O_1= Pre-Test O_2= Post-Test

In this design there is minimal control. There is somewhat more structure, there is a single selected group under observation, with a careful measurement being done before applying the experimental treatment and then measuring after. This design has minimal internal validity, controlling only for selection of subject and experimental mortality. It has no external validity.

1.22 Significance of the Study

This programme has equipped the teachers with enough knowledge to be able to identify, understand and assist, the students with Learning Disabilities. This would in turn enable the students to study and acquire knowledge in the usual classroom environ, without the need of a specialist educator to help them. Invigorating teacher education depends on the vision of what distinguishes teachers who are

well equipped to meet the needs of disabled children. The qualities that characterise such teachers involves a complex interplay of training, knowledge and skills that have been identified in various researches on inclusion. This would further enable an infinitely better quality of life, education and employment for children with Learning Disabilities, facilitating a much better educated society.

The researcher felt the need to design a training programme in Learning Disabilities for teachers so that in would be of help in identifying, assessing and remedying the quality of education being imparted by the teacher and absorbed by the student. The training also aimed on enabling the teachers in general school to participate collaboratively as a part of a team in implementation of IEP. This training programme in Learning Disabilities could be imparted to the teachers during their respective Teacher Training Programme and thus special training would not have to be organised for the same. Further still, the programme has equipped teachers to help and assist students and their parents to cope with the Dyslexia. This would help in early identification of students with Dyslexia and thus help in lowering the drop-out of students due to their inability to cope with studies as a result of their disabilities, enabling a higher, better and superior educated number of students to pass out of institutions.

CHAPTER 2
REVIEW OF RELATED LITERATURE

Chapter 2

Review of Related Literature

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Chapter 2

Review of Related Literature

2.1 Introduction

Taking on the Learning Disabilities as a challenge, is a task on to itself, especially if the teachers, entrusted with imparting quality education, do not have the right tools for the job-at-hand. It has been said that the first step to take up a challenge, is to be informed. Thus, it becomes imperative that the teachers, trainee teachers and in-service teachers are informed of the situation, its symptoms and how to deal with them. This also implies that the educational processes and systems should cater to the child's receptive capabilities.

Needless to say, there has already been, considerable amount of work that has been done on this subject and more work would be done in the future. The researcher has made efforts and progress based on the work that has been done in the past, for which it was imperative for the researcher to scourge through the various literary media that can be found and focus on the relevant material. It would be worth mentioning that segregation of material and focussing on rejection, can yield infinitely better results than expected. Rejecting the inclusion of material that might seem strong, makes the review of related literature, a more refined process, setting a higher standard of material intake, thereby allowing precise relevancy, enhanced understanding and an up-to-date inclusion of material. It is to this process, that this research, owes its status of being the hallmark of researches.

A research project, usually, is the quantitative/qualitative/empirical and/or logical analysis of a statement or equation. For every line of thought, there is a lot of matter available, which has been previously worked upon, researched and has been referred to. The data/material, books, thesis, research papers, etc. that remain from the incessant sifting, and can be considered to be significantly relevant for the ongoing research are considered to be included as the **Review of Literature**.

The work already been done, needs to be associated to the present, ongoing research, so that there is a relevance and a deep sense of purpose for the research study. The

review of related literature is one of the foremost processes, which provides a work-base, on which the researcher can build his/her research, and yet appreciate the work done before. (Thiyagu, 2014)

It is recommended that a significant part of the review of related literature, be completed, prior to the formalisation of the project (Kumar, 2016). This is essential to make sure that the student are not repeating the work that someone has already done earlier. Sometimes, if the research proposed has already been undertaken earlier, then it provides an option of modifying the work by adding a new perspective or altering some of the methods of research to obtain a perspective that will be different from earlier works and thus more valuable. Occasionally, a research work may be an exact repetition of the work done earlier, but with a different set of data or sources of facts, and purpose of the research may just be to see if the results with a new set of data are similar to earlier works or otherwise.

Instead of following a complex data-matrix structure, the review of related literature , has been into the following heads:

- Thesis & Dissertations
    - Ph.D and Masters Degree
- Research Findings
- News articles
- Book review
- Online Journals and Internet Resources
- Other Teacher Training Programmes

Table 2.1: Summary of Review of Related Literature

Thesis and Dissertations		
Ph.D		
Topic	**Year**	**Author**
Competencies required for high school teachers to deal students with learning difficulties	2013	Vakkil. M
Inclusive Practices in Urban and Rural Schools in Pune: A Study	2013	Belapurkar. Anita Makarand
Experiencing School: An Exploratory, Multimethod Study of the Perceptions of Secondary Teachers, Advocating Parents and Mainstream Students with Learning Difficulties	2006	Watson. Julie
Curb cuts for writing: Students with learning disabilities' perceptions as learners and writers	2011	Schock. Robin Elizabeth
Programme based on brain-based learning for developing writing skills	2016	Morris. Dr. Aparna
Attitude, role performance and problems faced by teachers teaching children with special needs in inclusive schools	2011	Balasundaram. A
Overcoming exclusion through inclusive approach An experimental study	2014	Susmitha, P S
Impact of an intervention programme on the development of life skills among children with dyslexia	2011	Geeta
Effectiveness of inclusive education of Chhattisgarh An evaluative study	2005	Singh. Anita
The influence of teacher’s knowledge about learning disabilities on their feedback and emotional reactions	2012	Andabil. Azam Fattahi
Master's Degree		
A study on teaching competency of the teachers in schools for the mentally challenged	2008	Eben Julie and Sebastian

Dyslexia: An Investigation of Teacher Awareness in Mainstream High Schools	2013	Thompson. Sharon Lynette
Research Findings		
Rethinking professional issues towards inclusion	2011	Sujatha Malini, Dr. J
Knowledge of Specific Learning Disabilities among Teacher Educators in Puducherry, Union Territory in India	2013	Kamala. R, and E. Ramganesh
News Articles		
Every classroom has 2 or 3 children with Learning Disabilities - Times of India	2013	Malti Iyer
Textbook traumas for kids with Learning Disabilities-Times of India	2012	Shreya Bhandary
Plan to help kids with Learning Disabilities - Times of India	2011	Manash Pratim Gohain
10% of kids in India have learning disability: Experts - Times of India,	2012	
Dyslexia, autism awareness low among teachers - The Hindu	2014	Govind. D. Belgaumkar
Book Review		
A Parent's Guide to Special Education	Linda Wilmshurst, Alan W. Brue	
Children and Learning Difficulties	Onita Nakra	
Executive function 101	National Centre for Learning Disabilities	
Learning and Learning Difficulties: A Handbook for Teachers	Peter Westwood	
Dyslexia Decoded	Dr. Bina Nangia	
In Service Teacher Education: On Inclusive Education	SSA Manual	
Doing Research in Further Education and Training	Susan Wallace	
Understanding Dyslexia	Jill Hammond and Fabian Hercules	
The Evolution of Research on Dyslexia	Javier Gay´an Guardiola	
Other Teacher Training Programmes		
Teacher Training Program (TTP)	Anjali Morris Foundation, Pune	

FC-ECLD-Foundation Course on Education of Children with Learning Disabilities (FC-ECLD)	Rehabilitation Council of India (RCI) and Morris Foundation
Integrated B.Ed and M.Ed Special Education • Introduction to Neuro-Developmental Disabilities • Identification, Assessment and Needs of Children with Specific Learning Disability • Inclusive Education • Curriculum Development and Evaluation: SLD	Rehabilitation Council of India (RCI)
Sarva Siksha Abhiyan Teacher Training Program	Pune Municipal Corporation and Anjali Morris Foundation

2.2 Thesis & Dissertations

2.2.1. Ph.D.

2.2.1.1. Vakkil. M, 2013, Competencies required for high school teachers to deal students with learning difficulties

Objectives

1. To develop a questionnaire to identify the required competencies for the high school teachers to deal students with learning difficulties.
2. To find out the significant differences, if any, in the required competency on various aspects of learning difficulties in students by the high schoolteachers due to the variation in their gender
3. To find out the significant differences, if any, in the required competency on various aspects of learning difficulties in students by the high school teachers due to the variation in their age.

Key Findings

1. This study revealed the importance of providing knowledge and skills to the teachers working in high schools, as the teachers need more knowledge in the field of learning difficulties.
2. The study also revealed the necessity of incorporating the competencies in the teacher education curriculum. Specialized resource teachers can be trained by the NCERT and Department of Education at University level who have good expertise in this area.
3. The government should appoint one resource teacher for each block and he/she will assist the general high school teachers in his jurisdiction about the ways and means of overcoming learning difficulties in students. National, state and district level surveys can be conducted to identify the nature and types of learning difficulties and the extend of learning difficulties which in turn will help to tailor the need based training programs for the high school

teachers. Such an activity will help to avoid drop out, wastage and stagnation at high school level.

2.2.1.2. Belapurkar. Anita Makarand, 2013, Inclusive Practices in Urban and Rural Schools in Pune: A Study

Objectives

1. To assess the Physical and Human Resources in Urban and Rural schools in Pune with respect to:
   a) Modification in Infrastructure for Inclusion of differently abled students.
   b) Material essential for Inclusion of differently abled students.
   c) Technological support required for inclusion of differently abled students.
   d) Availability of Human Resources for Inclusion of differently abled students.
   e) Knowledge, acceptance and attitude of teachers in Urban and rural schools in Pune with respect to Inclusion of differently abled students.
2. To compare the physical and human resources in Urban and rural schools in Pune with respect to Inclusion of differently abled students.
3. To develop and test the effectiveness of the Knowledge Based Program in Inclusive Education (KBPIE) for teachers in urban and rural schools in Pune.

Key Findings

1. This research involves a program in Inclusive Education for teachers which mainly for uses on three important steps essential for inclusion of students with different abilities in the regular classroom, i.e. Identification, assessment and remedial strategies.

2. The present programme gives stress on self preparation regarding inclusion, cooperation and collaborative learning techniques. It is based on social constructivism which is the basis of true inclusion. It makes the teachers capable of making the maximum use of the available resources.
3. The program makes optimum use of modern technology for orienting the teachers. The above study helps teachers to develop their skills regarding inclusion of all students in regular classrooms.
4. The program mainly focuses on the application of all the strategies regarding Inclusion.

2.2.1.3. Watson. Julie, 2006, Experiencing School: An Exploratory, Multimethod Study of the Perceptions of Secondary Teachers, Advocating Parents and Mainstream Students with Learning Difficulties

Objectives:

1. Understanding the issues related to secondary teacher
   1.1. How do demographic indicators relate to teachers attitudes towards students with learning difficulties?
   1.2. How do demographic indicators relate to teachers understanding of characteristics of students with learning difficulties?
   1.3. What is the relationship between teacher's attitude and teachers understanding about students with learning difficulties?
   1.4. What factors do teachers perceive as affecting levels of support given to students with learning difficulties in the secondary school setting?
2. Understanding the perceptions of secondary teachers, advocating parents and mainstream students with learning difficulties.
   2.1. How do teachers perceive the experience of education for students with learning difficulties in schools?

2.2. How do advocating parents perceive the school experience of their children?

2.3. How do students with learning difficulties perceive their school experiences?

2.4. What are the similarities and differences of perception among the groups?

Findings

1. The findings indicated that the majority of the teachers sampled had a negative attitude towards students with learning difficulties and no discernable differences were found among demographic groups
2. Teachers understanding was also uniformly low across the sample with the exception of those with master's degree who exhibited more extensive knowledge.
3. No correlation was established between teacher's attitudes and teachers understanding about students with learning difficulties.
4. The teachers with respect to their level of understanding of the learning disabilities did not possess the knowledge to recognise mainstream students with learning difficulties and that students experienced inappropriate pedagogy, assessment and curricula.
5. Informants agreed that teachers receive inadequate pre-service training and professional development while existing policies exclude most mainstream students with learning disabilities from receiving assistance.

2.2.1.4. Schock. Robin Elizabeth, 2011, Curb cuts for writing: Students with learning disabilities' perceptions as learners and writers

Objectives:

1. Understanding students' perceptions of having an equal opportunity to participate with others

2. A need increased the self-confidence of a student with learning disabilities
3. need to formulate differential course for students with disabilities.

Findings

1. The findings indicated that the perceptions of disabled children about themselves are influenced by the behaviour of parents, teachers and peers towards them.
2. Disabled children require professional help in co-operation with parents help for boosting self confidence.
3. The teachers play an important role in the psychological development of disabled children.
4. There needs to be instituted mandatory courses about students with disabilities in teacher education programs reducing the use of ad-hoc approaches

2.2.1.5. Morris. Dr. Aparna, 2016, Programme based on brain-based learning for developing writing skills

Objectives:

1. To survey the current practices followed in schools regarding the teaching of writing skills of English Language.
2. To develop a programme based on the principles of Brain-Based learning to develop the English language writing skills for the students of standard six.
3. To implement the programme based on the principles of Brain-Based learning and test its effectiveness on developing the English language writing skills for the students of standard six.
4. To find the opinion of the participant students regarding the brain based learning programme.

5. To establish the usability of the product- Brain-Based learning programme.

Findings

Since this research thesis was used to understand the usability analysis and its implementation for research work, the relevant findings for the same are:

1. The understandability component of Brain-Based learning programme is 95.66%.
2. The learnability component of Brain-Based learning programme is 100%.
3. The objective achievement component of Brain-Based learning programme is 89.99%.
4. The operability component of Brain-Based learning programme is 91.77%.
5. The user satisfaction component of Brain-Based learning programme is 100%.
6. The applicability component of Brain-Based learning programme is 98.11%.
7. The total percentage of the usability of the Brain-Based learning programme is 95.90%.

2.2.1.6. Balasundaram. A, 2011, Attitude, role performance and problems faced by teachers teaching children with special needs in inclusive schools

Objectives:

1. To find out the attitude of Teachers towards inclusive schools, Attitude of Teachers towards education of CWSN in inclusive schools, and Attitude of teachers towards teaching in inclusive schools.
2. To find out the role performance of teachers dealing with VI, HI, MR, and OH children in inclusive schools.

3. To find out the problems faced by the teachers dealing with VI, HI, MR and OH children in inclusive schools.
4. To find out the differences, in the attitude of teachers towards inclusive schools according to the type children with special needs.
5. To find out the differences, in the attitude of teachers towards education of CWSN in inclusive schools according to the type of children with special needs.
6. To find out the differences, in the attitude of teachers towards teaching in inclusive schools according to the type of children with special needs.
7. To suggest suitable measures based on the finding of this research to develop more favorable attitudes among teachers towards children with special needs in inclusive setting, for improving the teaching and training methods and to handle the challenges of inclusive education.

Findings

1. The overall theme identified in the research programme is closely related to teacher's attitude, their role in teaching and the problems they face in Inclusive schools.
2. Inclusion is happening without the understanding of implications on teachers.
3. Adequate education and continuous training creates increased motivation and capacity to self-actualise the teachers meeting their professional needs

2.2.1.7. Susmitha, P S, 2014, Overcoming exclusion through inclusive approach An experimental study

Objectives:

1. To analyze the Dispositions towards Inclusion of Upper Primary School Teachers.

2. To compare the association between the Dispositions towards Inclusion and Specialization of Upper Primary School Teachers.
3. To analyze the Knowledge & Skills for Inclusion of Upper Primary School Teachers.
4. To compare the association between Knowledge & Skills for Inclusion and Specialization of Upper Primary School Teachers.
5. To compare the effectiveness of select Inclusive Differentiating Instructional Approaches (IDIA) namely Learning Stations/Centers, Tiered Lessons ,and Graphic Organizers with the Existing Activity Method of Instruction (EAMI) in enhancing the Academic Achievement in General Science of Pupils at Upper Primary Level based on
   i) Total sample
   ii) Ability Groups (LD/Struggling , Grade Level, Advanced Level)
   iii) Learning Styles(Visual, Auditory, Kinesthetic)
   iv) Types of Disability (Reading, Writing, Arithmetic)
6. To compare the effectiveness of select Inclusive Differentiating Instructional Approaches (IDIA) namely Learning Stations/Centers, Tiered Lessons and Graphic Organizers with the Existing Activity Method of Instruction (EAMI) in improving the Self Concept of Pupils at Upper Primary Level based on
   i) Total sample
   ii) LD /Struggling Pupils
   iii) Types of Disability (Reading, Writing, Arithmetic)
7. To compare the effectiveness of select Inclusive Differentiating Instructional Approaches (IDIA) namely Learning Stations/Centers, Tiered Lessons and Graphic Organizers with the Existing Activity Method of Instruction (EAMI) in augmenting the Achievement Motivation of Pupils at Upper Primary Level based on

i) Total sample

ii) LD /Struggling Pupils

iii) Types of Disability (Reading, Writing, Arithmetic)

8. To analyze the worthiness of each of the Inclusive Differentiating Instructional Approaches (IDIA) namely Learning Stations/Centers, Tiered Lessons and Graphic Organizers in enhancing the Continuous Academic Performance of Different Categories of pupils with LD at Upper Primary Level.

Findings

1. The analysis revealed that teachers hold conflicting and restrictive beliefs about inclusive education
2. Findings of the survey reveal that Upper Primary School Teachers are in favour of Inclusion. At the same time, majority of these teachers are unaware of the behaviour management techniques to handle children with disabilities in the Inclusive Classroom set up. Both General and Special Teachers are having similar favourable opinion of Inclusion, but major share of General Teachers are in need of further training in managing an Inclusive Classroom effectively.
3. The results of the study have revealed that the select IDIA strategies namely Learning Stations/Centers, Tiered Lessons and Graphic Organizers have a positive effect in enhancing the Academic Achievement, Self Concept and Achievement Motivation of Upper Primary School Inclusive class pupils. On the basis of the findings of the study, it can be emphatically stated that the select IDIA strategies are powerful pedagogical scaffolds for building an appropriate learning environment for all types of learners in an Inclusive classroom.

2.2.1.8. Geeta, 2011, Impact of an intervention programme on the development of life skills among children with dyslexia

Objectives:

1. To identify Life Skills deficits among children with Dyslexia.
2. To design intervention programme for developing essential Life Skills among children with Dyslexia.
3. To implement intervention programme for developing essential Life Skills among children with Dyslexia.
4. To evaluate the efficacy of intervention programme for developing essential Life Skills among children with Dyslexia.

Findings

1. The findings highlight the fact that intervention programme was found to have significant as well as positive effect on the development of Life Skills among primary school students suffering from Dyslexia.
2. The present study could help enabling the teacher training institutions / apex level organisations as NCERT, NUEPA, and Rehabilitation Council of India (RCI) to redesign the teacher training curricula, particular at primary level, by keeping in view the individualised needs of the special children.
3. The study underlined the fact that though Life Skills are important for every individual, still these do not occupy any specific place in the school curriculum. Hence, it is high time to implement Life Skills training as the core component of the present curriculum at school level also. The teachers as well as the students should be encouraged to participate in such skills training programme with great enthusiasm.

2.2.1.9. Singh. Anita, 2005, Effectiveness of inclusive education of Chhattisgarh An evaluative study

Objectives:

1. To assess increase in enrolment of disabled children and decline in their school drop-outs.
2. To assess inclusive classroom environment with modifications in seating arrangement of disabled children, keeping in mind their special needs.
3. To have information regarding disability-issues seen as an inclusive component of all children with general school system.
4. To assess the extent of adaptations and flexibility in curriculum planning, teaching- methodology and evaluation.
5. To collect information about the functions of resource teachers working as liaison among general teachers, schools authorities, parents and community.
6. To have information about generation of potential master- trainers and their multiplier-effects resulted in the trainings of other general teachers specially of rural areas.

Findings

1. Some initiatives, like intensive trainings of the teachers on inclusive education, enrolment drives to get admitted the disabled children in the nearby mainstream primary schools, and creation of more favourable atmosphere for the mainstreaming of the disabled children, have resulted in very positive awareness among administrators, teachers, parents and children to bring SEN children in neighbouring common schools of mainstream.
2. Majority of teachers accepted that there were not satisfactory modifications in the school and classroom arrangements according to the special needs of the disabled children.

3. In order to be a good and competent teacher of inclusive schools, most desired skill is to establish rapport with the students to give them fair, firm, warm, responsive and positive attitudinal behaviour. The works of the disabled children should be intensively monitored and sufficient time and directions should be allocated to them according to their needs.
4. Most of the teachers of inclusive schools of Chhattisgarh State are of the views that teaching with teaching-aids in the classroom is most desired skill. Emphasis on activity- based teaching and taking helps from the parents of the disabled children in the completion of their home assignments seem very healthy classroom practices.
5. Teachers are of the view that creation of fearless, full of curiosity and joyful learning classroom environment in the inclusive schools are necessary for positive learning.

2.2.1.10. Andabil. Azam Fattahi, 2012, The influence of teacher's knowledge about learning disabilities on their feedback and emotional reactions

Objectives:

To study as to what degree teachers' knowledge of the presence or absence of a learning disability would influence:

1. The level of feedback (reward or punishment) they gave to a hypothetical student based on his/her ability and effort expended;
2. The level of anger felt by teachers toward the hypothetical student based on his/her ability and effort expended;
3. The level of pity felt by teachers toward the hypothetical student based on his/her ability and effort expended;
4. The expectations the teachers held for the student's future failure based on his/her ability and effort expended.

Findings

1. Teacher's knowledge of a child's learning disability can be seen to influence both the decision to reward or punish as well as the amount of reward
2. This study aimed to explore and deepen the understanding of teachers' attributions toward students with LD. The study examined teachers' responses to student failure, considering students' ability, effort, and LD status. given, with the students with learning disabilities receiving moderate levels of reward/ punishment in all cases.
3. The level of ability of a student with learning disabilities' can have some influence on a teacher's anger toward him/her, with teachers rating their anger somewhat lower for the low-ability than the high-ability students.
4. Teachers rated the student with learning disabilities as more likely to fail in all the four instances.
5. The findings revealed that teachers generally gave greater rewards and less punishment to the students with LD than their NLD peers. Also, they felt less anger and more pity toward LD students than their NLD peers following test failure. Expectations of future failure were higher for students with learning disabilities, as well.

2.2.2. Masters Degree

2.2.2.1. Eben Julie and Sebastian, 2008, A study on teaching competency of the teachers in schools for the mentally challenged

Key Findings

1. There was significant difference found between trained and untrained teachers, rural and urban school teachers and married and unmarried teachers in their teaching competency
2. The chi-square values related to teachers' age and their teaching competency differed in terms of organisational activities and co-curricular/ extra curricular activities.

2.2.2.2. Thompson. Sharon Lynette, 2013, Dyslexia: An Investigation of Teacher Awareness in Mainstream High Schools

Aim of the study:

The main aim of this study was to assess teachers' awareness levels of dyslexia, their perceptions of their ability to identify and manage dyslexia, and their perceptions of the adequacy of their pre-service and in-service training in dyslexia

Key Findings:

The results indicated that teachers had adequate knowledge of dyslexia, believed they are able to identify and manage dyslexia, and believed that they received little or no pre-service and in-service training in dyslexia.

The main conclusion that can be drawn is that teachers need on-going adequate pre-service and in- service training in the field of dyslexia.

2.3. Research Findings

2.3.1. Sujatha Malini, Dr. J, 2011, Rethinking professional issues towards inclusion

Objectives

a) To assess the awareness of regular school teachers, special teachers towards inclusion of children with special needs.

b) To assess the attitude of regular school teachers, special teachers towards inclusion of children with special needs.

c) To assess the possessed and required competencies of regular school teachers and special teachers to handle children with special needs in inclusive educational set up.

Key Findings

Qualitative analysis reveals that the both the teachers feel that it is a good practice to include children with disabilities in the regular classroom. But it is a long process and one has to face lot of challenges. Regular teachers feel that they have to take up new responsibilities. Teachers feel that they don't know what to do! They are not trained in inclusive practices.

2.3.2. Kamala. R, and E. Ramganesh, 2013, Knowledge of Specific Learning Disabilities among Teacher Educators in Puducherry, Union Territory in India

Objectives

1. What is the current level of knowledge about the Specific Learning Disability among the teacher educators?
2. Is there any difference in the level of knowledge about the Specific Learning Disability among the teacher educators based on their teaching experiences?

Key Findings

The findings of the present study reinforces the findings of the previous studies that there is a lack of knowledge about the SpLD even among the learned

members of the society, especially the teacher educators those who are considered as teacher's of teachers who plays a crucial role in sensitiing the problems of students in the teaching learning process. If the situation continues, the students with SpLD tend to perform poor in academics and become drop outs which will turn into a hurdle to Universalization of Primary Education and Education For All (EFA). Knowledge about SpLD is inevitable for the teachers to teach the students the way they learn easily and provide proper accommodations in the general classroom settings. It's the bound duty of the teacher educators to train the prospective teachers to deal with the differently abled students specifically the invisible disability like the SpLD. Knowledge of LD among teachers is also needed for another reason... the success of inclusive classrooms is related to teachers' knowledge of the unique needs of their students (Campbell, Gilmore, and Cuskelly, 2003).

2.4. News Articles

2.4.1. Every classroom has 2 or 3 children with Learning Disabilities - Times of India, 28th April 2013 By Malti Iyer

The article strongly states that in India, the Learning Disabilities (LD) movement is nascent with schools and education boards having made concessions for LD students less than a decade back. Popular Hindi film, Taare Zameen Par, in fact, helped spread the LD concept more than any parental or medical group could. But Indian schools, even those in metros such as Mumbai, do not have adequate special teachers to handle such children in classrooms.

2.4.2 Textbook traumas for kids with Learning Disabilities-Times of India, 22nd September 2012, By Shreya Bhandary

This article begins with the premise that Maharashtra provided special concessions to students with Learning Disabilities (LD), way back in 1996, the first state in the country to do so. However, despite a court ruling 10 years later in 2006 enforcing the same, students with Learning Disabilities still find the going tough, as do other students with special needs like autism and physical disabilities.

2.4.3. Plan to help kids with Learning Disabilities - Times of India, 21st Nov. 2011, By Manash Pratim Gohain

This article was an eye opener to the numbers and situation to the problem of Learning Disabilities in India. It states that, Caught between parental pressure and the teachers' inability to identify Learning Disabilities (LD), more than three crore such children are not only becoming academically poor but also show behavioural abnormalities later in life. Action Plan 2011 launched by the Indian Academy of Pediatrics (IAP) on Sunday demands that teachers be equipped with identification tools, parents informed about LD, and most importantly, 19,000 paediatricians be trained to deal with the disability. Nearly 20% of schoolchildren suffer from some kind of learning disability. Experts warn that without intervention at an early age, they will become a liability on society.

2.4.4. 10% of kids in India have learning disability: Experts - Times of India, 27th Jan 2012,

This article was written after Learn 2012 was organised in Chennai. “At least 10% of children in the country have a learning disability”, say experts at Learn 2012, an international conference on inclusive education and vocational options. Speaking at a pre-conference press meet, organizers said one in 200 people in India have autism, while an estimated 30 million children are known to be dyslexic. The article further reports that the only way to handle the situation is early detection and intervention by which the symptoms of unacceptable language and behaviour can be minimized. "We have attained success in mainstreaming children with autism spectrum disorders and Learning Disabilities. We are now thinking of vocational options for them to train in so that they will become self-reliant and eventually independent," said Lakshmi Krishnakumar, learning disability director of Sankalp, an institution providing remedial instruction to children with Learning Disabilities and autism. According to the article, four experts from the UK, with experience in designing and implementing vocational training and inclusive education modules to children in the UK, participated in the conference. Special education consultant Christine Morris, who has spent the last 20 years working with teachers in Indian schools, said, "I am going to talk about

how to engage all the children in the class. Children who are often called naughty, troublesome or lazy actually have needs to be addressed."

2.4.5. Dyslexia, autism awareness low among teachers - The Hindu, 24th Aug 2014, By Govind D. Belgaumkar

This article has been a rather singular support to this research. It strongly advocates the need for a teacher training program in Dyslexia. The study highlights the need for training teachers who are best suited to identify disorders among children. If the films like Taare Zamin Par did raise awareness about little known dyslexia problem among children, the things do not appear to have gone far in tackling it. ***A recent survey by two city doctors has revealed that knowledge that helps teachers identify dyslexia and autism among children is poor.*** The study spread across 32 schools and covering 314 teachers, has found that only one in three teachers had adequate knowledge of dyslexia. Though 262 teachers were 'aware' of the term dyslexia, only 24 teachers had prior training. Most teachers were in favor of training sessions on dyslexia and expressed their willingness to attend such sessions. It was conducted by Anil Shetty and B. Sanjeev Rai, both paediatricians at Father Muller Medical College. Dyslexia defined as a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. Awareness and knowledge about learning disorders among school teachers may play a major role in early identification and management of children with these disorders, the two doctors have pointed out. One study in India has put the prevalence of dyslexia at 11.2 per cent while another study showed dyslexia, dyscalculia and dysgraphia were responsible for 72.76% of the poor school performance cases. The latest estimates of ASD's prevalence show it could affect one in 54 children. India has 23 lakh of them, the study says pointing out that ***teachers who interact with students on a daily basis are more likely to identify and monitor subtle signs or symptoms. But they need to be trained to do that. In fact teachers expressed their willingness to attend training sessions,*** the researchers said, adding, "This sentiment should be taken advantage of …"

2.5. Book Review

2.5.1 A Parent's Guide to Special Education - Linda Wilmshurst, Alan W. Brue

Being a parent to a child with special needs, can be one of the most daunting tasks one can ever take up in their lives. It starts with the realisation that all the dreams about their child, would have to be shelved and then understanding that their child would need them more than ever to start on a journey to stand on its own feet. This book has been written by a pair of school psychologists from Florida, who maintain that it's not enough for parents to ask lots of questions. They must ask the right questions — about educational and medical testing, psychological evaluations, legal rights, and so on. What do the various educational laws mean for the student child? What do assessment results mean? How can the student be an effective advocate for the student child? Authors Linda Wilmshurst and Alan W. Brue outline all the important questions — and either answer these questions themselves or tell parents where they can get answers. An invaluable guide to understanding the parents' role in improving the learning skills from a support system, which is usually out of the teacher's realm, the home.

In order for the teaching-learning process to be more effective, the support of the parents, with an enhanced understanding of their child's condition and the general awareness of the issues that the child faces and the help that can be extended from their end, can prove to be miraculous. On all counts, this book reaches out to the parents and helps them be more efficient in taking it further from where they are, without reinventing the wheel. It is rather more interesting for the researcher to know that apart from the teacher understanding and knowing more about how to teach a child with Learning Disabilities, cues from parents speeds up the process, along with the support at home makes the learning more accelerated. Ultimately, the goals of the parents as well as the teachers are the same, a better environ for the child's growth.

2.5.2 Children and Learning Difficulties - Onita Nakra

Purpose of the book

The book is designed to guide teachers and parents through the world of Learning Disabilities. Owing to the author's in-depth understanding of the subject, she chose to mirror the changing face of Learning Disabilities and the new educational directions emerging from the recent research. On the global education front, the last decade has seen a multitude of new developments in every aspect of learning disability from definition to intervention.

The book is written from an objective analysis' perspective by a compassionate academician. The written matter is extremely well composed with objectivity finely engrained with the detailed explanation of the subject.

The book makes an excellent read for academicians as well as people dealing with children facing disabilities in their general life, especially the expanded chapter on the learning disabled adolescent and adult, many of whom are now in college and in work as mainstream professionals. The field of adult Learning Disabilities is still in its infancy in India but there is major work going on the subject in other countries.

Theme of the book

The book focusses on the firm belief that all children can learn, and their functioning can be meaningfully enhanced through appropriate educational intervention and mediation. Children with dyslexia and other Learning Disabilities do become contributing adults, heads of corporations and institutions, and make remarkable achievements in diverse fields. The focus, thus, has shifted to improving teaching practices rather than just condemning the child with a label that is often a blemish on his/her qualities.

The diagnosis of a learning disability if no longer a stigmatising label but a stamp that upholds the child's uniqueness. The book's finest quality is its clear simple language and its easy diction which would make it very easy for individuals, especially parents, who want to jumpstart their child's educational future.

Development of the subject

The author starts with a general warming up towards the subject with an understanding of the Learning Disabilities and an enumeration of the characteristics of Learning Disabilities, along with the causes of Learning Disabilities.

She proceeds to clear off and give a better understanding to the readers of the various disorders of language, followed by Dyslexia, specified as an order of reading, and Dysgraphia, as a disorder of the written language. The disorder of mathematics, making calculations, etc., known as Dyscalculia is mentioned as a completely separate chapter, followed by a detailed analysis and understanding of Learning Disabilities in adolescents and adults.

The assessment and remediation forms a completely separate section, with an in-depth explanation of the assessment process, the approaches and types of assessments, tests, observations made during these tests. She further on discusses the role of professionals in the assessment process. The remedial processes entail different approaches, understanding and dealing with the learning process of a child with disabilities. The designing of a remedial program, dovetailed with an individualized educational plan aims at creating an ideal learning structure for the child, the critical components of which would be:

- Current educational performance
- Annual goals and short term objectives
- Nature of the services to be provided
- Duration of the services
- Evaluation of the progress

The remedial process also details the role of parents and special day schools in the learning process of the child.

2.5.3 Executive function 101 - National Centre for Learning Disabilities

This e-book is designed to explain executive functions in a clear, understandable way and to help the student pinpoint the struggles the students child might

experience. Executive function is a set of mental processes that helps us connect past experience with present action. People use it to perform activities such as planning, organizing, strategizing, paying attention to and remembering details and managing time and space. It is organized into three broad categories where executive skills come into play: learning; behavior and emotions; and social situations and relationships. It was an excellent resource to read and understand how a CWSN (Child With Special Needs) can organise and deal with his day-to-day life in a better way, which in turn helps the researcher, a glimpse into the minds of the target category of students. It also helps the researcher to structure and inform the trainee teachers on how to understand the symptoms displayed by the students, what they mean and how can the teacher deal with them in the best manner possible, so as to bring about the desired change.

2.5.4. Learning and Learning Difficulties: A Handbook for Teachers - Peter Westwood

This book attempts to place the phenomenon of learning difficulty within a much wider context than is usual by exploring a variety of learning processes, learning theories, and concepts about learning. An understanding of the way in which learning occurs is fundamental to an understanding of how and when problems in learning may arise. It helps teachers and others appreciate that problems in learning are not all due to weaknesses within students or to lack of motivation on their part.This book, being an outstanding teacher resource explores a variety of learning processes, theories and concepts in order to help educators better understand and distinguish between the causes and outcomes of student learning problems. The author aims to show that problems in learning are not all due to weaknesses within students or their lack of motivation. Many learning difficulties are created or exacerbated by environmental, not personal, influences. Factors that have an impact on a student's learning environment can be readily modified or improved, whereas weaknesses or 'deficits' within students are not so easily changed.

Two of the most powerful influences in the learning environment are the school curriculum and approaches to teaching. He further argues that many learning

problems can be prevented or minimised by matching teaching methods and lesson content to a learner's current aptitude and prior experience.

2.5.5. Dyslexia Decoded - Dr. Bina Nangia

Dr. Bina Nangia draws from over two decades of experience in the field to note thatearly detection of dyslexia in children, a sustained awareness drive in the media and mandatory training of school teachers on special education are among some of the thrust areas that would help bring a long term change in the society. A good number of school going kids in India suffer from dyslexia silently. Though the term is familiar to a large number of people today, a lot needs to be done in a sustained manner to achieve success. In the book these points among others geta due stress laid on them.

"It is understood now that inclusive education is the only way. If done systematically and with specific goals, it can integrate those with special needs into our system very well and the society benefits on the whole. But training in special education is still very scattered and diffused. The need of the hour is to have a massive systematic training on a large scale. It ***should be mandatory for teachers to be trained in special education during their degree course,***" says Dr. Nangia.The point is important as "sensitivity towards a child's emotional and educational needs go hand in hand." The author has been instrumental in setting up the mandatory special education centres at more than 20 schools across the country, and says research has shown that boys show a greater learning difficulty than girls. "This is also probably because boys tend to be noticed more in schools and homes. Socially, parents focus more on boys getting more academic support than girls."The sooner dyslexia is identified, the better the coping strategy. The author goes on to state that early interventions help children deal with their difficulties educationally, emotionally and socially. An adult with undiagnosed dyslexia will never realise his/her potential and try to fit in a world with no skills.

2.5.6. In Service Teacher Education: On Inclusive Education - SSA Manual

The book-manual is a vital source of information and helped the researcher in more ways than one. Government policy making and the complexities of its

implementations is something that is of deep interest to the field of research. The SSA was a major milestone in the history of Education of Children with Special Needs in India. For the first time, a policy was drafted, which levelled the playing field and mandated inclusive education as a policy that had to be implemented in all schools. Though in a country, as vast as India, and with its strange mix of orthodox, modern, urban, rural and several such dimensions, which make policy implementation a challenge, it was a far fetched dream to see the policy implemented as it was conceived and being followed up. However, the SSA has been critical in laying out a roadmap to the future of inclusive education in India. It was deeply researched, to:

- get an insight into the perspective, workings and reasons behind creation of policies of the Sarva Shiksha Abhiyan (SSA)
- know various approaches related to education of children with special needs;
- understand various assumptions on special education, integrated education and inclusive education.

2.5.7. Doing Research in Further Education and Training by Susan Wallace

Research is an essential component of professional practice. Whether it be action research in a specialist subject or a more formal empirical study, research can improve the quality of teaching and and enhance professional development. This text is a guide to a range of approaches written specifically for teachers and trainee teachers in the Further Education and Skills Sector. A person pursuing the course of PhD in Education, does so with an intention of adding value to the field of education. With that intention every researches chooses a topic to conduct a research. However it becomes to difficult to decide on the questions of the research and how to go along doing the research. The text covers all aspects of research and explores how research through day-to-day investigations can enhance practice. In all chapters, examples and real-life scenarios from the Further Education and Skills Sector are included, helping the reader to link theory and practice. Whether you need to complete a research project for your teaching

qualification, or you need to understand how action research can support your professional development, this text gives you the essential, focused guidance you need. This book is a guide to the researchers on summarizing and compiling the works and data accumulated. It also explains the importance of using current and recent relevant literature. The book also imparts knowledge on various techniques of converting qualitative information into analysable quantitative data. It answers various questions - Why do it? How does research help? What are research ethics and how to apply them? How to decide on research questions? How to conduct an interview and what to observe?, etc

2.5.8. Understanding Dyslexia - Jill Hammond and Fabian Hercules

The book finds itself as one of the most useful resources that a dyslexic student can find for self use. The benefits of knowing that the student is dyslexic are talked about in this book. The student will find information describing the nature of dyslexia, how this relates to the student as an individual and the way in which the student's assessment report shows that the student(s) are dyslexic. There are also sections devoted to making positive use of this information. The questions that the student might already have and others, which the student may have not yet thought of asking, are explored. The emphasis is on giving the student essential information and providing a starting point for the student to find out more. This includes understanding the context in which the student are studying. Knowing that the students are dyslexic can mean making changes in the way the student studies. Included in this book are some useful tips about study skills and explanations about why some of the more traditional ways of studying may not be appropriate for the student. It is hoped that this book is useful as a starting point, so that the student will find independence as a learner and enjoy the student's time studying at college or university.

2.5.9. The Evolution of Research on Dyslexia - Javier Gay´an Guardiola

To be able to work on a subject, it is imperative to know its history and the channel of its research. The thoughts, perspectives and work that has been done on

dyslexia, enables an enhanced furtherance of the research and evolution of the subject. To quote the book:

"From Cleopatra to Cher, dyslexia has probably been present always during the history of humankind, even before writing systems were developed. We can imagine a caveman unable to understand the paintings in a cave depicting predators, venturing outside to be devoured by a beast. The consequences of dyslexia in our current society may not be as dramatic or life-threatening as I have imagined them in the beginning of humankind, but they are socially important, since they involve learning problems at an early age that can affect the cognitive and emotional development of a child. The causes of dyslexia are yet unknown, although there exist many theories, some more popular than others among scientists."

This short history of dyslexia and its genetic etiology had many limitations. The early stages of dyslexia are documented better for two complementary reasons: Enough time has passed since these events occurred so that they are already consolidated, but at the same time, their relative recentness has provided us with good historical reference of the facts. However, the recent history of dyslexia has experienced a proliferation of theories and studies, with different degrees of validity. Although the author has tried to write a complete and detailed history, he has had to limit many contributions to one sentence or so in order to save space.

2.6. Other Teacher Training Programs

2.6.1 Teachers'Training Program (TTP) by Anjali Morris Foundation

This program is conducted by experienced BOLD program Resource Teacher (RTs) from Anjali Morris Foundation and guest speakers. Participants who enroll in the training program learn strategies and skills to address the learning needs of children with Learning Disabilities.

Objective

To train teachers to identify students with Learning Disabilities and to modify classroom teaching to accommodate the learning needs of such students.

The Program

Both theory and practice are taught through lectures, case presentations, group discussions and role play. Theoretical presentations are followed by practical applications that involve teacher participation.

Theory topics

- Perception
- Cognition
- Memory
- Eye Hand Coordination
- Handwriting
- Spelling
- Reading
- Math
- Brain Gym
- Pre-Academic skills
- Informal Assessment

Practicum

- Presentation of case studies
- Administration of assessments
- Development of IEPs

2.6.2 FC-ECLD-Foundation Course on Education of Children with Learning Disabilities (FC-ECLD), Rehabilitation Council of India (RCI) and Morris Foundation

Since June 2012, the Rehabilitation Council of India (RCI), a statutory body under the Ministry of Social Justice and Empowerment, Government of India has authorized Morris Foundation as a Skill Training Centre in Maharashtra for its online Foundation Course on Education of Children with Learning Disabilities (FC-ECLD). Details of the course can be obtained from the RCI website at www.rehabcouncil.nic.in. Practical sessions for the FC-ECLD are held at the Morris Foundation on the first week of each month.

Objective

The principle objective of the Skill Training Program is to develop competencies required of in-service teachers that enable them to:

- Understand the varied educational challenges of children with LDs,
- Educate children with LDs in the classroom,
- Appropriately manage classrooms that include children with LDs,
- Undertake remedial teaching of differently-abled children and children with LDs.

The Program

Participants complete the prescribed hours and submit assignments online for the course's four theory blocks. They attend the seven-day Skill Training Program (STP) at the Morris Foundation.

Participants receive hands-on training and learn the various skills necessary to plan effectively for students with LD in any educational environment.

The program however, has been discontinued and RCI now offers B.Ed Special Education and M.Ed Special Education in the regular mode and B.Ed Special Education in Distance Mode B.Ed Special Education and M.Ed Special Education in the regular mode and B.Ed Special Education in Distance Mode being conducted by RCI

Integrated B.Ed.-M.Ed.Special Education by RCI

Course Title: Introduction to Neuro-Developmental Disabilities

The course integrates relevant subject matter in the areas of Specific Learning Disability, intellectual Disability and Autism Spectrum Disorder. This course will prepare preservice teachers to work with students with Neuro-Developmental disabilities in inclusive and specialized settings. It fosters the acquisition of the broad-based knowledge and skills needed to provide effective educational programs for students with learning and behavior characteristics. The course emphasizes implications for educational and vocational programming, curriculum, and instruction.

Objectives - After completing the course the student-teachers will able to:

• Explain the Nature, Needs and Intervention of Specific Learning Disability

• Explain the Nature, Needs and Intervention of Intellectual Disability:

• Explain the Nature, Needs and Intervention of Autism Spectrum Disorder.

Course Title: Identification, Assessment and Needs of Children with Specific Learning Disability.

This course is planned to orient and educate the student-teachers on understanding the condition of Specific Specific Learning Disability (LD), the various types of SLD and acquiring the skills of assessment in different domains and curricular areas with theoretical framework of approaches and techniques of assessment, and diagnosing the condition. Along with the exposure to the standardized tools of assessment, the informal assessment tools are introduced. It is expected that the student will be proficient in the use of the tests, as well as know how to develop appropriate tools for identification followed by being able to interrelate the findings from various assessments to plan an intervention programme.The skills in development and use of these tools will help them in conducting comprehensive assessment for programme planning. Along with this the last unit covers issues related to assessment and legal provisions for students with SLD

Objectives:

After completing the course the student-teachers will able to

- Define Specific Learning Disability (SLD)
- Describe and differentiate among different types of Specific Learning Disability .
- Describe various approaches and techniques of assessment.
- Explain the domains/areas of assessment.
- Apply the different types of Assessment
- Debate on Trends and Issues with Reference to SLD

Course Title: Inclusive Education

The course is designed to develop an understanding about inclusive education and addressing diversity in the mainstream classroom. It is also

formulated in a way that the learners will know the pedagogical practices and recognises ways in which different stakeholders can collaborate for the success of inclusive education.

Objectives: After completing the course the student-teachers will able to:

- Explain the meaning, definitions and historical perspective of inclusive education.
- Discuss the Polices & Frameworks Facilitating Inclusive Education
- Define and apply Adaptations Accommodations and Modifications appropriately.
- Develop Inclusive Learning Environments and Academic Instructions
- Demonstrate Supports and Collaborations for Inclusive Education

Course Title:Curriculum Development and Evaluation: SLD

This course covers all about curriculum. The first unit is about different designs of curriculum wherein UDL needs to be looked at from the inclusive education perspective. The second unit needs to be studied as the emphasis is on inclusion, hence curriculum hierarchies are essential to be understood. Unit three and four are about instructional planning and adaptations that will benefit students with Specific Learning Disability . Unit five is on evaluation where different kinds of evaluation have to be studied, so as, to be able to choose the appropriate tool for evaluation.

Objectives: After completing the course the student-teachers will able to:

- Define nature of curriculum and various approaches of curriculum development
- Analyse Curriculum Hierarchies and Designing.
- Demonstrate Instructional Planning
- Discuss Pyramid plan, Pedagogical Theories and curriculum transaction
- Explain Adaptation, Modification, Accommodation
- Apply the tools of Assessment & Evaluation

2.6.3. Sarva Siksha Abhiyan Teacher Training Program - Pune Municipal Corporation and Anjali Morris Foundation

The Morris Foundation conducts training workshops for Pune Municipal Corporation (PMC) in-service teachers under the aegis of Sarva Shiksha Abhiyan (SSA).

The 86th amendment to the Indian Constitution makes free and compulsory education to children age 6-14 a fundamental right. SSA is the Government of India's flagship program for achieving Universalisation of Elementary Education (UEE). A main objective of UEE is to include Children With Special Needs (CWSN).

Objective

To sensitize Pune Municipal Corporation's mainstream school teachers about the seven disabilities covered under the Persons with Disabilities Act (1995) and to facilitate inclusive education for Children With Special Needs (CWSN).

The Program

The Morris Foundation periodically conducts a six-day training workshop for mainstream school teachers detailed by PMC. Experts deliver lectures on each disability (Mental retardation (or Intellectual Disabilities), Mental Illness, Blindness, Low Vision, Hearing Disability, Speech Disability, Locomotor Disability) and teaching strategies for Children With Special Needs (CWSN).

2.7. Internet Resources

2.7.1 Online Journals

2.7.1.1. Learning Disabilities: Signs, Symptoms and Strategies

This article offers the signs and symptoms of each plus strategies to use at school and at home, especially that the term Learning Disabilities is an umbrella term that describes a number of more specific Learning Disabilities and it gives a better understanding on how to deal with it.

2.7.1.2. Learning Disabilities: Signs, Symptoms and Strategies

The Journal of Learning Disabilities (LDX) provides specials series (in-depth coverage of topics in the field, such as mathematics, sciences and the Learning Disabilities field as discursive practice), feature articles (extensive literature reviews, theoretical papers, and position papers), research articles (reports of qualitative and quantitative empirical research), and intervention articles (overviews of successful interventions).

2.7.1.3. The British Journal of Learning Disabilities

The British Journal of Learning Disabilities is an interdisciplinary international peer-reviewed journal which aims to be the leading journal in the learning disability field. It is the official Journal of the British Institute of Learning Disabilities. It encompasses contemporary debate/s and developments in research, policy and practice that are relevant to the field of Learning Disabilities. It publishes original refereed papers, regular special issues giving comprehensive coverage to specific subject areas, and especially commissioned keynote reviews on major topics. In addition there are reviews of books and training materials, and a letters section.

2.7.2. Online Resources

2.7.2.1. http://www.ncld.org

Based in New York, the website for the National Centre for Learning Disabilities provides a very informative resource for Learning Disabilities. It has been the go-to centre

2.7.2.2. http://www.ldonline.org

The site features hundreds of helpful articles, multimedia, monthly columns by noted experts, first person essays, children's writing and artwork, a comprehensive resource guide, very active forums filled with information and advice about Learning Disabilities and ADHD.

2.7.2.3. http://www.ldamerica.org

In 1963, a resourceful group of parents convened a conference in Chicago entitled "Exploration into the Problems of the Perceptually Handicapped Child." The professionals that participated and these parents shared a common concern: the recognition of the dire need for services for their children, services that did not exist. During the months that followed, many preliminary details towards formation of a national organization were worked out. With a core of volunteers agreeing to become its nucleus, the Association for Children with Learning Disabilities (ACLD) was created and incorporated in January, 1964.

2.7.2.4. http://teachingld.org

The website is a treasure trove of information regarding the best practices for teaching students with Learning Disabilities. The website has been made keeping teachers in mind and functions to provide teachers with an array of informative tools. It also serves as an information repository and has numerous books, journals, etc.

2.8 Conclusion

The wealth of information regarding Learning Disabilities, Dyslexia in particular, is overwhelming. The vast array of information thus, makes segregation, categorisation and usefulness, a task, as a lot of information can be categorised into multiple sub-heads and cross referenced. Majority of information available online, as well as with the researcher, was about identification, understanding and self-help for the individual who has Learning Disability or for the immediate family/kin, of the person, to facilitate a smoother life. Thus, this makes it difficult to understand the teacher's perspective on the same.

Corrollarily speaking, the teacher finds it difficult to find information, which enables him/her, to deal with a child with Learning Disabilities. While this may be still the condition for special educators/teachers/counsellors, it poses an even higher degree of challenge for a general classroom teacher, who is trying to make the teaching-learning process, a smooth curve for that one odd child in his/her classroom.

There is a lot of conjecture when one start sifting through the literature that is available. A lot of the literature serves a guideline for the parents to understand and aid in a proper educational system that should be or are, put in place. A few books have been written for the amateur or beginner who has just entered the world of Learning Disabilities. Of the literatures reviewed by the researcher, majority of the work is either a study of existing structures, to develop an understanding of the prevalent methods, or a comparative study with similar methods employed in different parts of the world, or the requisites to implement such programs. Building on these, the researcher created the training programme and implemented the research to enhance the learning being imparted. This has optimised and created a leaner training system that can easily be implemented and yet is very effective.

When the work was started on this topic, the researcher was uncertain of the extent of these issues. After reviewing the literature and information available across the globe, on the need for a teacher training programme on Learning Disabilities, it became amply clear that there was a severe need of such a programme. Whether it may be termed as a bridge programme or an add-on module, this training programme has the

capacity to assist in enhancing the possibility of an all inclusive classroom and make it a reality. It does add on to the fact that despite the vast amount of data, theories and knowledge, available across various platforms, it is imperative to filter out a lot of material and understand what is needed and what should not be included. There have been times, when the supporting material was strong enough to be included as a part of the research, but it was deliberated and argued upon and that has been the standard that was set early on, for this research to go through.

As an example, Onita Nakra's book, titled, ***"Children and Learning Difficulties"***, focusses on the firm belief that children can learn and their functioning can be meaningfully enhanced through appropriate educational intervention and mediation. Based on this premise, the researcher worked to come up with a teacher's training programme which would enable a regular classroom teacher to understand the difficulties faced by the children. This also shifts the focus to improving the teaching practices rather than condemning the child with a label that is often a blemish on his/ her qualities. The designing of a remedial program, dovetailed with an Individualised Education Plan (IEP), aimed at creating an ideal learning structure for the child, the critical components of which ensured that the training programme had a robust and meticulous implementation, similar to what was discussed in the book.

M. Vakkil's research titled "***Competencies required for high school teachers to deal students with learning difficulties***", emboldens and highlights the importance and the necessity of incorporating the competencies in the teacher training curriculum. There was also a detailed discourse on the drop-out, wastage and stagnation of students at the high school level owing to the unmanageable state of learning difficulties/ disabilities in various stages of students. The research study also strongly recommended the involvement of NCERT and Department of Education as well as other Government Agencies. This was used as a base by the researcher in furthering the concept and understanding the present status of methods and preparedness of government and private schools in dealing with children with learning difficulties.

The review of literature related to other teacher training programs, teacher knowledge as well as Learning Disabilities, gave an in-depth understanding of the research that has already been conducted and provided an opportunity to fill in the gaps. It also

gave direction regarding the line of thought and structure the content and best methodology for this research, based on which it moved forward. It is also imperative to know that even though the researcher clearly understood the path to take, the related literature was reviewed time and over again to understand and match up to the line of thought that was adopted to execute the research.

CHAPTER 3
METHODOLOGY OF RESEARCH

Chapter 3

Methodology of Research

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Chapter 3

Methodology of Research

The general strategy that outlines the way in which research is to be undertaken is termed as the **Research Methodology**. The methodology to be chosen for the study depends upon the purpose of the study. The present study was aimed at developing a teacher training programme for enhancing teaching skills to train children with Dyslexia.

3.1 Introduction

It is the systematic study of methods that are, can be, or have been applied with a discipline. It is the basic plan that specifies the means, methods and procedures followed to attain the various objectives of the research. Means, methods and procedures to be used to attain the objective depend upon the type of research. To attain a higher degree of efficiency and to follow a pattern to establish well defined objectives, a certain method has to be followed and when they are continuously followed as a flow, the methodology followed by the researcher becomes more structured and thus, more lean. This strategy enabled a rather far reaching insight into type of data that needed to be collected, to be analysed and processed for results. This also affected the quality of training programme that was being administered, as the feedback from the target subjects and observers, helped streamline the training programme and its effectiveness on the target audience.

3.2 Preparing for the Research

Since Learning Disabilities is not a part of the syllabus, of a course at either B.Ed or M.Ed levels, the researcher had no prior knowledge of the subject. However, from personal experience in teaching in schools, the researchers was extremely intrigued by the idea of teaching children with special needs, in a regular classroom setup.

Thus in order to gain better understanding and expertise in the field, the researcher underwent training of two courses:

Skill Enhancement Course In Learning Disability (SECLD)

Conducted by the 'Dr. Anjali Morris Education and Health Foundation, in Collaboration with Centre of special education, SNDT, Mumbai

Foundation Course On Education For Children With Learning Disabilities (FCECLD) and Organized by the Rehabilitation Council of India (RCI).

Both these courses had laid the foundation for the researcher to go ahead with the doctoral research.

3.2.1 Skill Enhancement Course in Learning Disability (SECLD)

This was a 120 hour course, conducted by the Dr. Anjali Morris Education and Heath Foundation, in collaboration with centre of special education, SNDT, Mumbai. The goal of the course was to enhance the skills of teachers, in the field of Learning Disabilities. The topics covered were:

1. Concepts, Characteristics and Types of Learning Disabilities
2. Developmental aspects and deviance
3. Associated conditions with Learning Disabilities
4. Types of curriculum and adaptations
5. Task Analysis
6. Assessment and Remediation of basic learning skills
7. Assessment and Remediation of Cognitive process
8. Assessment and Remediation of Curricular Areas
9. Methods and Tools of Assessment
10. Dealing with Parents

It was an extensive course, with experts coming in from SNDT, Mumbai and teaching a lot of in-depth details. At the end of the course, the researcher was able to:

1. Explain the concepts of Learning Disabilities
2. Examine various Factors that adversely affect the human growth and development
3. Describe the nature and causes of Learning Disabilities
4. Describe types and characteristics of children with Learning Disabilities
5. Explain the concept of screening, identification and assessment of children with Learning Disabilities
6. Develop tools for assessment to identify areas of deficits in children with Learning Disabilities
7. Describe the Principles, types and areas of curriculum
8. Demonstrate skills in applying different intervention programs for children with Learning Disabilities
9. Apply intervention programs for the children with Learning Disabilities.

3.2.2 Foundation Course on Education for Children with Learning Disabilitites (FCELD)

The principle objective of the skill training program was to develop competencies required of in-service teachers that enable them to:

- Understand the varied educational challenges of the children with LDs
- Educate children with Learning Disabilities in classroom
- Appropriately manage classrooms that include children with Learning Disabilities
- Undertake remedial teaching of differently-abled children and children with Learning Disabilities.

The course duration was 39 hours on-site hands on training, at the Morris Foundation, Pune and 10 hours of online training through its website, which had modules for which one had to attend online sessions. At the end of the course the researcher was able to:

- Develop required competencies of in-service teachers and enable them
- Effectively understand the various educational needs of children with disabilities
- Undertake appropriate classroom management for children with disabilities
- Undertake appropriate classroom management for children with Learning Disabilities
- Undertake remedial or dual teaching of differently abled and children with Learning Disabilities

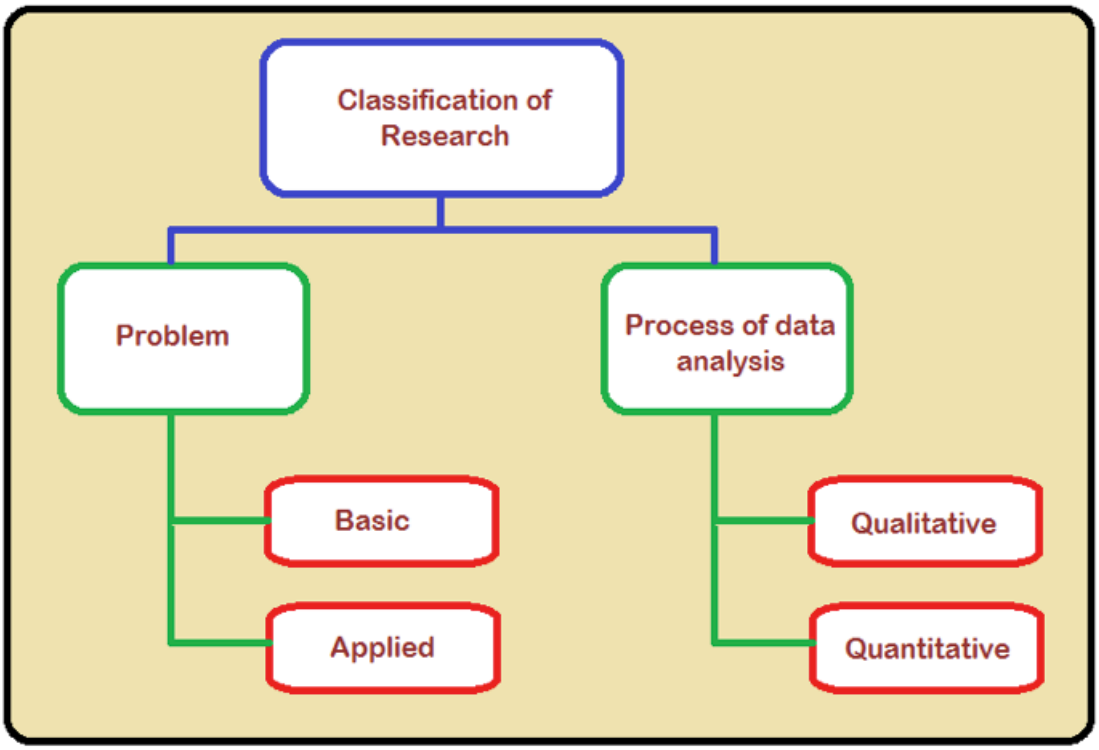
It was a major departure in thought and actionable procedure. Understanding the world of children with special needs was a very different experience, their goals, their limits, the challenges that they face on an everyday basis. Things that a "normal" person, would take for granted, something as easy as climbing steps, has to be thought of, calculated, decided and then executed.

After completing the courses, the researcher was confident and well equipped to start with the research process.

3.3 Type of Research

Researches can be classified on the basis of the problem it investigates and the process of data analysis followed. On the basis of the investigation of problem, a research can either be of Basic or of Applied, and on the basis of the process of data analysis followed a research can be Qualitative or Quantitative.

Figure 3.1: Classification of Research



Taking into consideration that the objective of the research was to solve a practical problem of the modern day, it has been classified as an applied research, for the goal of an applied research is to solve a real life problem while that of a basic research is enhancement of knowledge. However the research has used both Qualitative and Quantitative approaches of data analysis and hence it can also be categorised as both, a Qualitative and a Quantitative type of research.

3.4 Research Method

This further means that multiple methods are used to attain the objectives of the research. This blend allows for further refinement over type of data available and it being used for an enhanced analysis. Qualitative data was readily available owing to the fact that all the target subjects were closely observed and interacted with.

In the present study the multiple methods of the research were:

- **Survey Method** – The method incorporates an analysis of practices followed.
- **Product Development Method** – It involves developing a product that can be applied to yield fruitful results.
- **Experimental Method** – The effectiveness of a newly developed product is tested by experimentation.
- **Concurrent Method** – Concurrent method is a triangle formed by application of both qualitative and quantitative methods at the same time. It is known as the concurrent triangulation strategy.

Figure 3.2 Concurrent Method

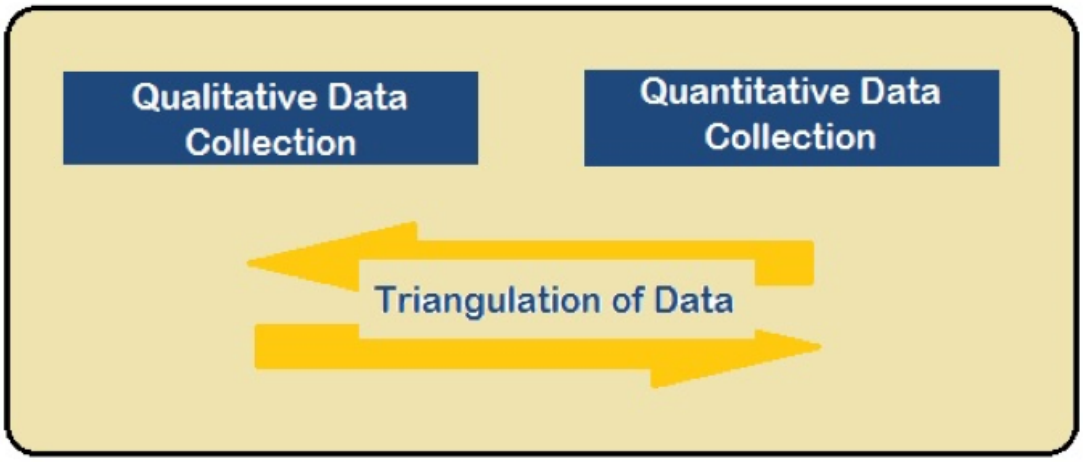


Table 3.1 Multi Method Research

Objective No.	Research Method	Flow	Data Collection Tool	Data Analysis Tool
1	Survey	Analyse the number of schools that have Children with Learning Disabilities and the number of teachers that have experience in teaching children with Learning Disabilities	Questionnaire	Percentage - qualitative test
2	Product Development	Developing a teacher Training Programme	Research/ study	Not applicable
3	Application	Conducting the teacher training programme	Not applicable	Not applicable
4	Experimental and concurrent	Determining the effectiveness of the teacher training programme	Standardised test	Test of normality, mean, standard deviation, t-test, etc
5	Feedback	Determining the usability of teacher training programme	Feedback	Percentage - qualitative test

3.5 Population

Population generally means the individuals to which the research applies. Populations are of two forms:

i) Target population

ii) Accessible population

3.5.1 Target population is the population for which the conclusion of the study holds true. The research was carried out for the benefit of all schools in India and hence it should be concluded that the target population for the research was all the schools in India. The principals of all the schools in India formed the population of the survey study.

3.5.2 Accessible Population is a subset of the target population and is also known as the study population or sampling frame. It is from the accessible population that researchers draw their samples. The population from which samples were selected was the schools of Pune and Bilaspur.

3.6 Sample

Since the population of the study is large the study is performed on a sample of the population. Sample was chosen using the technique of sampling. Sampling can be done in two ways:

- Random
- Non-Random/Purposive

The technique of sampling used for the study was Purposive Sampling.

The sample of the present research is given in the table below.

Table 3.2: Research Sample and Size

Objective	Sample	Sample Size	Method
1	Principals	18	Purposive
2	Not Applicable	Not Applicable	Not Applicable
3	Teachers	28	Purposive
4	Teachers	28	Purposive
5	Teachers	5	Purposive

3.7 Tools of Research

The input and the validity of the findings of a research are the solely dependent on the right use of the tools for data collection and data analysis of the research study. The tools used by the researcher for data collection and data analysis are as follows-

Table 3.3: Data Collection Tools and Analysis

Objective	Data Collection Tools	Data Collection Analysis
1	Questionnaire	Pie Diagram – Percentage – Qualitative Analysis
2	Research Study	Not Applicable
3	Not Applicable	Not Applicable
4	Standardized Test	Graphs – Descriptive Data Analysis – Inferential Data Analysis – Qualitative and Quantitative Analysis
5	Feedback through Questionnaire	Percentage – Qualitative and Quantitative Analysis

3.8 Methodology and Procedure for Objective 1

Objective 1: To understand the identification of students with Dyslexia in general schools, and find out the status of teaching these students with Dyslexia in general schools.

The first objective was '**To understand the identification of students with Dyslexia in general schools, and find out the status of teaching these students with Dyslexia in general schools**', with an underlying idea that increasing number of students in general schools requires teachers to have proper knowledge and training in inclusive education.

3.8.1 Method of Research

The method followed to attain this objective was to carry out a survey on the principals of schools. The Principal is at the pinnacle of educational administration of the school. As a part of duty every principal is aware of students studying in the school. Hence, there cannot be a better personality for the survey other than the principal. There are several ways in which surveys are conducted, but the basic steps involved are the same.

The steps involved in designing a survey are as follows:

- Establish the goals of the project.
- Determine the sample.
- Frame relevant questions.
- Gather data using questions
- Analyse Data.
- Draw conclusions.

3.8.2 Construction of the Questionnaire

Since the purpose of the questionnaire was survey and not knowledge based questionnaire, the questions contained were simple and did not require any validation process before its implementation in the study.

The survey questionnaire was small with 16 questions. The questions included some demographic questions; Yes/No questions and opinion based questions. The Demographic questions were to confirm that the school and the principal fit the sampling criteria of the study. The Yes/No close ended questions were designed to gather information required to draw valid conclusions. The opinion based question were open ended and were designed to assess the attitude of the principals with regards to inclusive education.

One of the questions in the questionnaire was framed to gather data that can be analysed to draw a conclusion with regards to the status of the teaching students with Learning Disabilities in general schools. The data gathered being

qualitative type was transformed into quantitative type for data analysis. Percentages were calculated were used for interpretations of data.

The blue print of the questionnaire is as follows:

Table 3.4: Blue-Print of Principal's Questionnaire

Sr. No.	No. of Questions	Type of Questions
1	3	Demographic Questions
2	12	Yes/No Questions
3	1	Opinion Based Questions

3.8.3 Population

For this Objective the population was all the schools in India.

3.8.4 Sample

18 Schools from Bilaspur and Pune were selected on random basis.

3.8.5 Data Collection Tools and Techniques

The data collected from the questionnaire was qualitative data. Qualitative data do not follow homogeneity and so it fails to follow normality, in other words such data cannot be measured. All the parametric tests to draw conclusions from the data gathered are based on normal distribution and hence the qualitative data gathered was transformed into quantitative type of data for the purpose of data analysis.

3.8.6 Data Analysis

The answers to questions framed to gather data were either a yes or a no. For an answer to each question that favoured the research '1' point was awarded and for answers that were adverse to the research '0' points were awarded. A count of the favourable and non favourable answers, were then analysed in terms of percentages.

3.8.7 Observation and Interpretation Tools and Techniques

The percentages of the favourable answers were compared with that of non-favourable answers to interpret the data gathered and to draw conclusions.

These were then further tabulated and cross referenced with expected findings to understand the process and progress better.

3.9 Methodology and Procedure for Objective 2

Objective 2: To develop a training programme in Learning Disabilities, with a specific focus on Dyslexia, for teachers teaching in general schools.

Once established from the conclusions of the above objective that there are a significant number of students with Learning Disabilities in general schools and that the teacher need to educate such students in the mainstream, the researcher moved to the third objective of the research, i.e. 'To develop a training programme in Learning Disabilities for teachers.'

3.9.1 Methods for Developing Training Programme

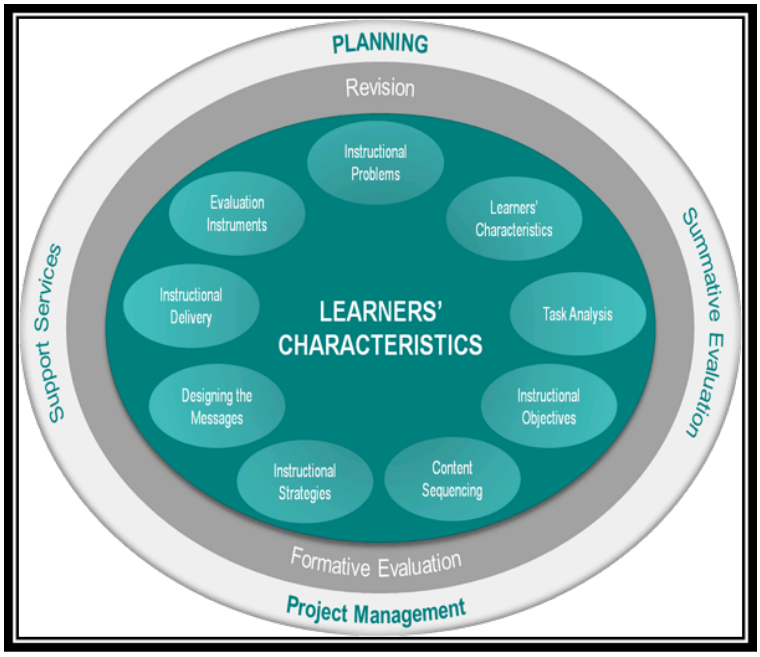
Various models of instructional designs are available for developing training programmes. The models give out the general steps to be followed for designing a training programme. Popular models of designing are Addie model, Dick and Carey model, Morrison, Ross and Kemp's Model. Morrison, Ross and Kemp's Model of Instructional Design Plan, popularly known as The Kemp's Model is the latest model which in contrast to other models lays out a circular structure rather than a linear structure. This model was found suitable to the type of knowledge based training programme required and hence was used as a base to develop the training programme. The model spells out 9 elements or steps arranged in a circular manner –

1. Identify instructional problems, and specify goals for designing an instructional programme.
2. Examine learner characteristics that should receive attention during planning.
3. Identify subject content, and analyse task components related to stated goals and purposes.
4. State instructional objectives for the learner.
5. Sequence content within each instructional unit for logical learning.

6. Design instructional strategies so that each learner can master the objectives.
7. Plan the instructional message and delivery.
8. Develop evaluation instruments to assess objectives.
9. Select resources to support instruction and learning activities.

The training programme developed to encompass all the 9 elements of Kemp's Model, as given under:

Figure 3.3: Kemp's Model



3.9.2 Development of Training Programme

a. Initial Scoping

Initially, the problem of the research itself became the basic scope of work and study, i.e. awareness of Learning Disabilities and training the teachers to educate students with Learning Disabilities in mainstream classrooms. Study of different books, articles and researches were done on Learning Disabilities and knowledge/skills/competence required to be developed for teaching students with Learning Disabilities. The researcher also attended trainings related to the initial scope of research.

b. Scoping

However, after the study, it was found that the scope of the training programme will be wider than the defined initial scope. The scope of the training programme was then defined to include Inclusion, Inclusive Education, Learning Disabilities with special focus on Dyslexia, Behavioural problems of students with Learning Disabilities, skills and techniques required to educate the students with Learning Disabilities in mainstream classes and cooperation of teachers with parents (also special faculty if any).

c. Identification of instructional areas

The objectives of the training programme that cover all relevant instructional areas can be summarised as follows:

1. Understand the manifestations of Learning Disabilities and understand the factors that affect development and learning.
2. Understand types and characteristics of receptive and expressive language disorders associated with Learning Disabilities.
3. Understand types and characteristics of perceptual, memory and reasoning disorders associated with Learning Disabilities.
4. Understand types and characteristics of behavioural, social and emotional disorders associated with Learning Disabilities.

5. Prepare and implement a Behaviour Modification strategy. Understand and implement types and characteristics of various assessment instruments and assessment methods.
6. Understand and implement procedures for conducting assessments to address the individual strengths and needs of students with Learning Disabilities.
7. Understand and cooperate in developing procedures, implementing and amending Individualised Education Plans (IEPs) and transition plans with Learning Disabilities.
8. Understand and implement strategies for planning and managing the learning environment for students with Learning Disabilities.
9. Understand principles and methods of individualising instruction for students with Learning Disabilities.
10. Understand and incorporate strategies for promoting emergent literacy skills in students with Learning Disabilities.
11. Understand and incorporate strategies for promoting reading skills in students with Learning Disabilities.
12. Understand and incorporate strategies for promoting written expression in students with Learning Disabilities.
13. Understand and incorporate strategies for promoting social competence of students with Learning Disabilities.

d. Developing an Outline for the Training Program

It is a proven fact that along with theoretical knowledge, practice is of vital importance. With-holding this fact, it was decided that the training programme would be designed in order to impart both theoretical and practical knowledge to the teachers. Theory parts of the training programme were designed in the manner that would ensure provision of all the knowledge required to implement practical activities. The practical parts of the training program were designed to help better

learning and improvise skill and competence of the teachers with respect to educating students with Learning Disabilities with special focus on Dyslexia.

Part A

The topic of Learning Disabilities was covered and to be discussed at length where all the relevant and related concepts were to be defined and elucidated. Each type of learning disability was described with multiple illustrative examples. A gist on various causes of such Learning Disabilities and how to identify students with Learning Disabilities was included in the discussion. The topic 'Types and Characteristics of Dyslexia,' was emphasized.

Part B

The second part was the general theory about terms and concepts used in the support systems for education of students with Learning Disabilities. The terms inclusion, scope of inclusion, inclusive education and importance of inclusion, being the pillars of the basis on which the research was undertaken, was explained and its advantages and disadvantages discussed in detail. This also covered the difference between inclusion and segregation and the impact of the said types of education on the emotional and social behaviour of students. The teachers were explained different types of special children and how Learning Disabilities differ from other disabilities. Concept of modifications and adaptations required to implement inclusive education. Other relevant concepts such as 'accommodations and provisions across examinations', 'management of Learning Disabilities with associated disorders in a classroom', 'role of professionals', 'collaboration between parents and school' formed a major part of the programme.

Part C

The next part of the training was identification and screening. This part of training included teaching the teachers, the need of identifying students with Dyslexia. Different types assessments procedures (both formal and informal) were incorporated in the training programme. The teachers were given an insight of the problems experienced by the students with Learning Disabilities.

Another topic of this part of the training program was the behavioural modification. In this topic, knowledge about the different challenges that a student with learning disability face, how these challenges affect the behaviour and mental health of a student with learning disability was integrated. The teachers were taught how to manage and modify these behavioural challenges.

Part D

Practical activities on the theoretical concepts (to develop skill and competencies required to be acquired by the teacher for teaching such students) formed the core part of the training programme. The practical training included activities of preparing an IEP (only for understanding purpose), development and implementation of screening checklist, preparation of behaviour modification plan.

3.10 Pilot study

3.10.1 Feasibility of the questionnaire

The questionnaire was prepared to identify aspects that were required for qualitative and quantitative data analysis.

After preparing the first version of the questionnaire its feasibility is tested by conducting a Pilot Study. Pilot study needs to be conducted as a pre-requisite to the main study. It involves the following two steps:

- Ascertaining the validity of a questionnaire
- Conducting an Item Analysis

Ascertaining the validity of a questionnaire

The questionnaire framed, was filled by 2 random teachers and their feedback upon the same was taken. The questionnaire was then edited according to the feedback received from the teachers. The edited questionnaire was shared with the experts for guidance and expert opinion. The questionnaire was again modified to incorporate the changes suggested by the expert.

Conducting Item Analysis

The questions, thus finalised were then divided into different categories to ensure that all aspects required for gathering data, both qualitative and quantitative were covered.

3.10.2 Pilot Study

The Pilot Study was conducted on 10 school teachers of two schools, one in Pune and the other in Bilaspur. Through the pilot study it was tested that the questions contained in the questionnaire were self explanatory, instructions were clear and that the questionnaire could be completed within the expected time frame without any problems. On the basis of the response of the pilot study a few modifications were incorporated and the final set of questions was framed.

3.10.3 Final form of the questionnaire

The final questionnaire thus framed contained a total of 57 questions divided in three parts. The first part is Demographic Information and it contained 17 basic question aimed at collecting sufficient information about the teacher, to ensure that the teacher fulfils the eligibility criteria for being a part of the sample. Part B and C consisted of 20 multiple choice questions and 20 True or False Statements to test the awareness of teachers in Learning Disabilities.

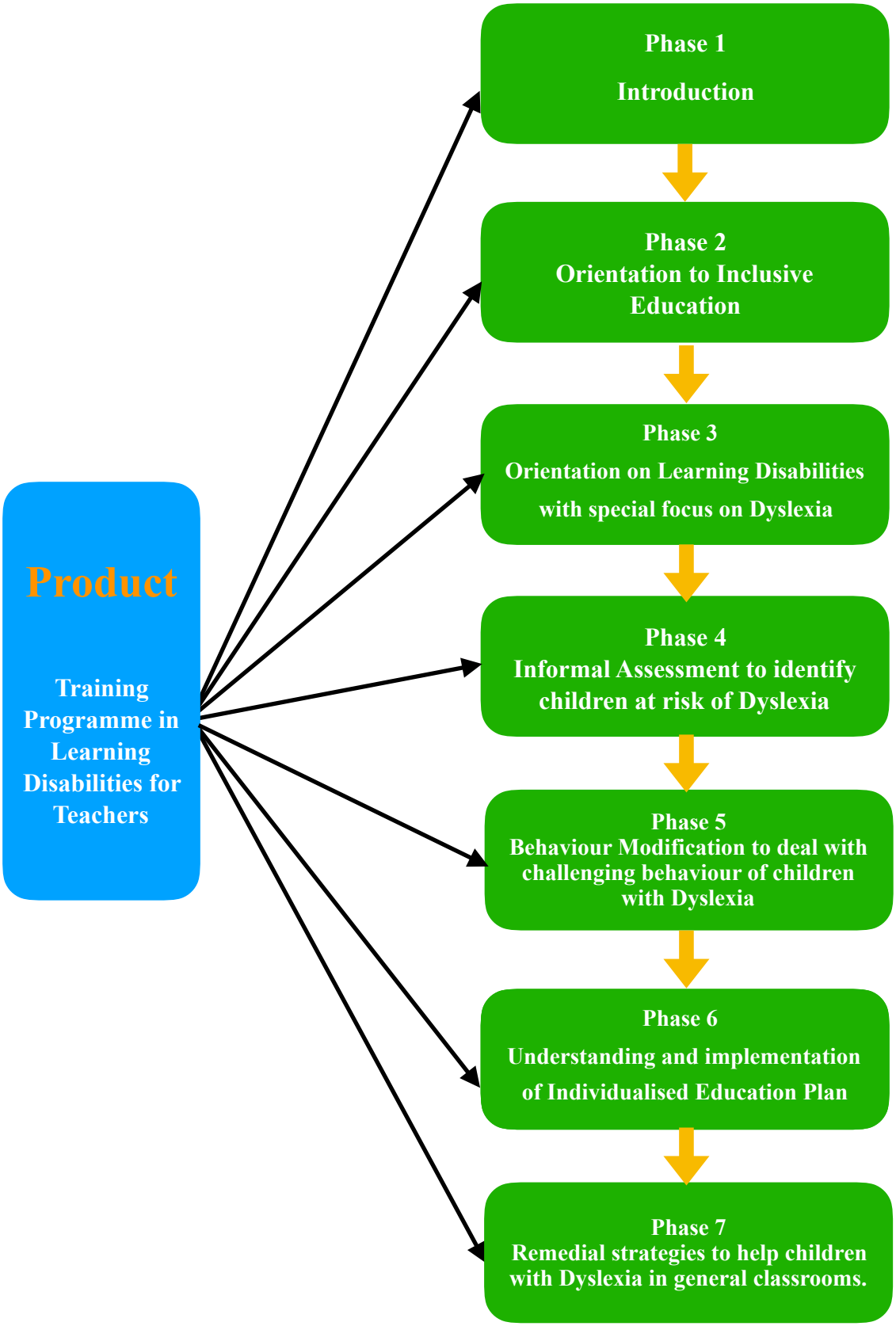
The blue print of the final questionnaire is as follows:

Table 3.5: Blue-Print of Teacher's Questionnaire

Sr. No.	Type of Questions	Topic	No. of Questions
1	Demographic Questions	The teacher's eligibility of being a part of the study population	12
2	Demographic Question	Willingness of teachers in teaching children with Learning Disabilities	3
3	Contingency Questions	Teachers that have undergone training for teaching students with Learning Disabilities	1
4	Contingency Questions	Number of teachers that have an experience of teaching children with Learning Disabilities	2
5	Multiple Choice Questions	Knowledge about Inclusion	10
6	Multiple Choice Questions	Knowledge about Learning Disabilities	10
7	True or False Statements	Knowledge about identifying children with Learning Disabilities.	10
8	True or False Statements	Knowledge about teaching students with Learning Disabilities	10

After designing the questionnaire, the product design was finalised. The finalised product

Fig. 3.4. Product Design and Flow Schematic



Phase 1: Introduction

- Introduction of participants and instructor
- Ice breaker session
- Pre-test conduction
- Stimulation session, where all participants were made to experience what an average child with disabilities, experiences in his day to day life.

Phase 2: Inclusive Education

- Concept
- Meaning
- Need
- Benefits
- Principles
- History
- Types of Special Needs
- Modifications and Accommodations
- Inclusion and General curriculum
- Types of Inclusion

Phase 3: Learning Disability

- Introduction to Learning Disability
- Difference between disability, difficulty and disorder
- What is a learning disability?
- Characteristics
- Types
- ADD and ADHD
- Dyslexia in detail

Phase 4: Informal Assessment

- Learning Disabilities and ADHD in the classroom: Overview
- Identification
- Interventions
- Assessments
- Adaptations & Modifications

- Activity:
    - Calculating Chronological Age
    - Oral Reading:(1st to 3rd)
    - Graded reading
    - Consonant Sounds
    - Blends & Diagraphs
    - CVC Words
    - Sentence
    - Vowel Sound
    - Magic ‘e’ Rule
    - Vowel team Words
    - Compound words
    - Basic Sight words
    - Reading Test
    - Spelling Test
    - Paragraph Reading
- Comprehension:
    b) Reading
    c) Listening
- Expressive Language/Free writing
- Math
- Errors that maybe observed

Phase 5: Behaviour Modification

- Challenging behaviour:
- Meaning
- Types
- Management of Challenging Behaviour
- Activity 1:
    - Identifying behaviour
    - Analysis of behaviour
- Activity 2:

    - ABC Form
    - Behaviour Modification Strategies
- Activity 3:
    - Strategies for behaviour modifications
    - Behaviour Modification
- Activity 4:
    - Behaviour modification plans
    - Development of a support plan

Phase 6: Individualised Education Plan

- Who needs an IEP?
- What is an IEP?
- How to develop an IEP?
- Who develops an IEP?
- IEP Process
- How to write an IEP
- Goals and Objectives in a IEP
- Activity: CASE STUDY
- Activity: Plan an IEP

Phase 7: Remedial Strategies

- Reading problem
- Comprehension
- Types of reading
- Strategies : K-W-L, S-Q-R-W, SQ3R, PIC etc.
- Strategies for Spelling Difficulties, Vocabulary and Expressive Writing

3.11 Methodology and Procedure for Objective 3

Objective 3: To implement the training programme developed, on target teachers teaching in general schools.

In order to ensure the completeness of the training programme and test the impact of the training programme on the teachers it was paramount that the training program be implemented on various teachers.

3.11.1 Population

The population for this objective was all the teachers in India, teaching English in Grades 1 to 5. The accessible or study population was the teachers teaching English as a subject to Grade 1 to 5 of the schools in Pune and Bilaspur.

3.11.2 Sample

Three schools were selected on random basis. A total of 28 teachers from the three schools were selected as sample on purposive basis. All the teachers of the three schools that taught English to Grade 1 to 5 formed the purposive sample for the study. A total of 28 teachers from three schools were selected as a sample for the pre-test, training and post-test. 8,10 and 10 number of teachers from School A, B and C respectively.

3.11.3 Method

The training programme was carried on in all three schools in the same manner. The conduction of the program was divided into two parts:

a) Theoretical

b) Practical

The topics that were covered in theoretical training were divided into the following headings:

Table 3.6: Schedule of Teacher Training Programme

Sr. No.	Topic Covered	Schedule	Material Used
1	Introduction	Phase 1	• Interactive Discussion • Brain Storming • Question Answers
2	Inclusive Education	Phase 2	• Interactive Discussion • Brain Storming • Question Answers
3	Learning Disability; Types, Characteristics, Identification	Phase 3	• Interactive Discussion • Brain Storming • Question Answers • Practical Activities • Active and Self Learning
4	Informal Assessment Of Students With Learning Disabilities	Phase 4	• Interactive Discussion • Brain Storming • Question Answers • Practical Activities • Self Learning
5	Behavioural Modification	Phase 5	• Interactive Discussion • Brain Storming • Question Answers • Practical Activities • Collaborative Learning
6	IEP	Phase 6	• Interactive Discussion • Brain Storming • Question Answers • Practical Activities • Self Learning
7	Remedial Strategies And Study Skills	Phase 7	• Interactive Discussion • Brain Storming • Question Answers • Practical Activities • Review of Literature • Self Learning and Active Learning

An attempt was made to give the teachers an insight of the problems experienced by a child with disability. The teachers were made to:

1. Read a handout that consisted of texts with skewed text type which is how the children with learning disability see it.
2. Read documents using spectacles that were badly scratched glasses
3. Do common daily activities like eating, drinking water, writing, with immobilised limbs

The theoretical concepts were explained to the teachers with the help of power point presentations. The teachers were also provided with handouts that consisted of brief description of the theoretical concepts for their reference. All the topics and concepts of the developed training programme were explained and discussed in detail with relevant references and a number of illustrations. Various activities were also integrated, all through the theory sessions to make the programme interactive.

The teachers were also trained in practical application of the various theoretical concepts mentioned above. For doing so, the training included activities on:

a) Behavioural Modification

b) Checklist

c) Informal Assessment Battery

d) IEP

a) Behavioural Modification

In the activity of Behavioural Modification the teachers practiced preparation of **ABC** (**A**ntecedent, **B**ehaviour and **C**onsequence) observation forms and then preparing a strategy to modify the behaviour of the student with learning disability.

b) Checklist or rating scale

Checklist or rating scale is a systematic method of gathering information about a student. It is usually done as a mental exercise and not required to be done on pen and paper. But as a part of the training the teachers were required to do such an assessment on paper. In this practical training, the teachers prepared a 5 point rating scale of a student with regards to reading, writing, mathematics, composition and behaviour.

c)Informal Assessment Battery

Another practical study was Informal Assessment Battery. In this activity the teachers were to test a student, in this case on a peer, with the help of various techniques and informally assess if the student faces problems of learning disability.

All the techniques used in this activity were:

- Graded Reading Test
- Vowel Test
- Compound Word Test
- Basic Sight Word Test
- Schonell's Reading Test
- Schonell's Spelling Test
- Comprehension Test

d) IEP (Individualised Education Plan)

At the end the teachers were also taught to prepare and IEP. Even though a teacher is not required to make an IEP, this practice was done so that teachers can understand and cooperating in the implementation of an IEP.

After the training, the teachers were again requested to fill the questionnaire as a part of the post-test. The data collected was analysed in using different techniques to understand the effectiveness as well as the usability of the programme.

3.12 Methodology and Procedure for Objective 4

Objective 4: Finding the effectiveness of the training programme in the Learning Disabilities for teachers teaching in general school

After the development of the training programme, the programme was conducted and its impact on the teachers was analysed to attain Objective 4, i.e. “finding the effectiveness of the training programme in the Learning Disabilities for teachers teaching in general school”.

3.12.1 Method

To evaluate the impact of the programme the teachers filled up a questionnaire before giving them the training and after the training (pre-test and post-test).

The teachers were also graded on the practical assignments conducted during the training program.

3.12.2 Data Collection Tools and Techniques

A questionnaire is a technique used for data collection, and its construction needs to involve the precise details that are requested from the subjects on whom the questionnaire would be administered. Even though it is a series of questions that gathers data in a manner that makes statistical data analysis easier, it heavily depends on the researcher’s understanding of the subject. The questionnaire that was developed for this research, consists of:

- Demographic Questions
- Contingency Questions
- Multiple Choice Questions
- True or False Statements

3.12.2.1 Qualitative Data

The demographic and contingency questions covered the aspects regarding:

- The teacher's eligibility of being a part of the study population
- The assessment of the willingness of teachers in teaching children with Learning Disabilities
- Understanding the number of teachers that have undergone training for teaching students with Learning Disabilities
- A general count of the number of teachers that have an experience of teaching children with Learning Disabilities

3.12.2.2 Quantitative Data

- The Multiple Choice Questions and the True or False statements framed to find out:
  - The awareness of teachers about inclusion and inclusive education
  - The awareness of teachers about Learning Disabilities
  - The level of understanding of teachers about types of Learning Disabilities and problems of children with Learning Disabilities
  - The knowledge of teachers in identifying children with Learning Disabilities and methods of teaching children with Learning Disabilities
- Keeping the above mentioned aspects in mind the questionnaire is divided into 5 parts:
  - General Questions about the teacher
  - Knowledge about Inclusion
  - Knowledge about Learning Disabilities
  - Knowledge about identifying children with Learning Disabilities.
  - Knowledge about teaching students with Learning Disabilities

3.12.3 Population

The population for this objective was all the teachers in India, teaching English in Grades 1 to 5.

3.12.4 Sample

The sample for this objective was a purposive sample of 28 teachers from Pune and Bilaspur.

3.12.5 Research Variables

These are measurable qualitative and quantitative criteria of a research that are studied by a researcher. On the basis of the focus of the researcher on such criteria they are classified into -

1. **Dependent Variables**
2. **Independent Variables**
3. **Extraneous Variables**

1. Dependent Variable

It is the criteria of the research that is under observation. For the current research the ability and knowledge of the teachers to deal with Children with Dyslexia in inclusive education formed a dependent variable. The pre-test scores of the teachers measured the ability and knowledge of the teachers prior to the Teacher Training Programme.

The post-test scores measured the ability and knowledge of the teachers after the Teacher Training Programme. The difference in scores was the dependent criteria under study by the researcher

2. Independent Variable

It is the criteria which forms a part of the study and has an impact on the dependent variable under observation. The Teacher Training Programme, that caused the difference in the Teachers' scores in the pre-test and post-test, formed the independent variable of the research.

3. Extraneous Variables

These variables are those which do not form a part of the study, but do have a minor impact on the dependent variable. The impact of these variables, however, does not affect the relation between the dependent and the independent variables that form a part of the study. The following were the extraneous variables of this research -

- Locality of the school of the teacher (Urban / Rural)
- Age of teacher
- Qualification of teacher
- Experience of teacher

3.12.6 Data Analysis Tools and Techniques

3.12.6.1 Descriptive Statistics

The following tools and techniques of descriptive statistics were applied:

Measures of central tendency or averages

- **Mean**

The mean, commonly understood as the arithmetic average, is the most useful of all statistical measures, for, in addition to the information that it provides, it is the base from which many other important measures are computed. In the present research mean of pre-test and post-test scores were computed and used as a tool for statistical analysis.

- **Measures of spread or dispersion**
  - **Range**

    The range, the simplest method of dispersion is the difference between the highest and the lowest scores. In the present research range of pre-test and post-test scores were comparatively analysed.

  - **Standard Deviation**

    Standard Deviation is a measure of the dispersion of a set of data from its mean. In the present research standard deviation was computed to aid the computation of t-score. The normal curve showing the distribution of frequency over the scores was drawn for better understanding of data.

3.12.6.2 Inferential Statistics

The following tools and techniques of inferential statistics were applied

- **Measures of relative position**
  - **T-score:** T-score is the ratio of the departure of an estimated parameter from its notional value and its standard error. In the present research it was used to express the score in terms of its difference from the mean in standard deviation units.
- **Measures of relationship**
  - **Smoothed ogive:** The smoothed ogive is an approach modelling the relationship between a scalar dependent variable ‘y’ and any more explanatory variables ‘x’. In the present research it was used to mark the slope of improvement between pre-test and post-test scores.

3.12.6.3 Skill Assessment

The following tools and techniques for skill assessment were applied

- Grading

  The teachers’ practical assignments were graded by the researcher on the basis of their performance. Their performance in the practical

assignments greatly depended on their ability to apply the theoretical knowledge gained by the teacher training programme and was measured as follows -

Grade	Performance
A	Excellent Performance
B	Good Performance
C	Needs more practice
D	Concepts not grasped

At first, the researcher graded all the teachers on each activity and then an average of each of the teacher was calculated to understand the overall skill of the teacher.

3.12.7 Observations

The information derived from the application of the above mentioned techniques of data analysis was used for making observations.

The methodology of this research was in sync with as much of the guided and understood path that was charted out at the beginning and revised during its execution. The derived results formed the next chapter on data analysis and conclusions based on that have been drawn subsequently.

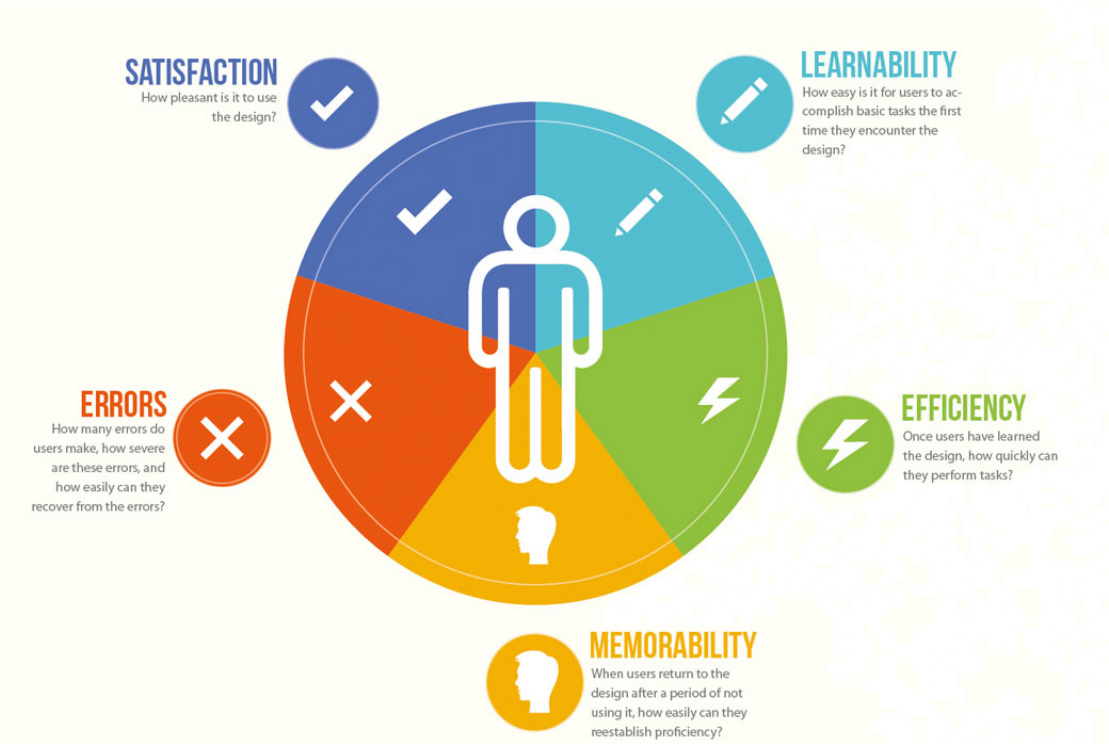
3.13 Methodology and Procedure for Objective 5

Objective 5: To test the usability of the developed product-Teacher Training Programme

Usability is the combination of fitness for purpose, ease of use and ease of learning that make a product effective (Rubin, Chinsell, 2008). Usability test focuses on determining whether or not the product is easy to comprehend, satiate the intended use, and functions as per the desires of the user. The Teacher Training Programme developed in Objective 2 was evaluated by testing it with representative users. Such evaluation discerned any usability problems, collected quantitative and qualitative data with respect to users performance and determined user satisfaction for the product. Usability is an inevitable and an important criteria of a product's

effectiveness and hence the researcher conducted the usability test with a view to establish the usability of the Teacher Training Programme.

Figure 3.5: Typical Jakob Neilsen's Usability Components



3.13.1 Selection of components to test the quality and extent of usability

The researcher followed the five usability components given by Jakob Nielsen. The components and their importance are as follows-

- **Learnability**

  Learnability looks at how easy is it for a user to accomplish basic tasks the first time they interact with your product. Do they struggle with a particular piece? Does the user get frustrated with how to accomplish this task? Does it hinder the rest of the experience?

- **Efficiency**

  The second component is efficiency. This analyses the users ability to quickly perform task once they have learned the design. Are they stumbling on tasks that should seem fairly straight forward? Why can't they complete that task quickly?

- **Memorability**

  If a user has spent some time away from the design and then return to it, how quickly can they re-establish proficiency. If the design is intuitive, then the re-learning time should be small.

- **Objective Achievement**

  A developed product must achieve its desired objective. Since Jakob Nielsen suggests changing of usability components for appropriate intended use the component of Errors is changed into Objective Achievement for better productivity of usability test.

- **Satisfaction**

  Determining how pleasant the design is to use can make a difference on whether or not users come back to it.

3.13.2 Selection of Usability Testing Method

The researcher selected the questionnaire as a tool to establish the usability. The researcher referred to questionnaire framed by Dr. Aparna Morris in her Ph.D Thesis titled 'Programme based on Brain-based learning for developing writing skills', 2016, for usability testing on a developed product. The questions in the questionnaire were regrouped according to the components of Jakob Nielsen, in which the error component was modified to objective achievement.

3.13.3 Pilot Study

Three teachers were selected on purposive basis from Pune. The questionnaire was administered to them, to confirm that there are no issues with the administration of the questionnaire.

The usability test was thus standardized and ready to use.

3.13.4 Population

The population for this objective was the same as that in objective 3, i.e. all the teachers in India teaching English in Grade 1 to 5.

3.13.5 Sample

Five teachers from Pune were selected on purposive basis for usability testing.

3.13.6 Administration of usability test

The manual and the CD were given to five teachers, and they were requested to use the manual. The important aspects of the Teacher Training Programme were explained to these teachers by the researcher as an initial orientation toward the programme.

A mid-review was done on the 11th day by the researcher to ensure that the teachers were using the Teacher Training Programme in the desired manner.

The teachers were requested to give a feedback after three weeks.

3.13.7 Data Analysis Tools

The feedback from the teachers was collected and reviewed. All responses were tabulated. Similar to Objective 1 the data collected for Objective 5 was qualitative data which was converted to quantitative data for analysis. The analysis was done on percentage basis.

CHAPTER 4
DATA ANALYSIS

Chapter 4

Data Analysis

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Chapter 4

Data Analysis

4.1 Introduction

Data can be defined as ‘representation of facts’, which in itself is insensate unless it is analysed to decipher meaningful information. Data analysis is the process of transforming data with the goal of devising useful information, suggesting conclusions or supporting decision making. Approaches to analyse data can vary. One way in which analysis can vary is by nature of data. Quantitative data is often analysed using statistics while qualitative data can be coded and broken down into concepts or variables. Even though their objectives as well as their applications overlap in numerous ways they are commonly considered to differ fundamentally.

4.2 Qualitative Analysis

Qualitative data analysis provides an in-depth understanding of the underlying reasons. It provides insights into the setting of a problem and frequently generates ideas for later quantitative analysis. Qualitative data analysis is seldom based on unstructured semi-structured methodologically flexible techniques, e.g. individual depth interviews or group discussions that are suited to elicit great detail and a comprehensive view. A semi-structured interview of principals used for data collection, percentage analysis and listing of the responses used, was analysis of qualitative data.

4.3 Quantitative Analysis

Quantitative data analysis, having quantification of data as its main purpose, allows generalisations of results from a sample to an entire population of interest and the measurement of the incidence of various views and opinions of the said sample. Such an analysis uses highly structured, rigid techniques, allowing unlimited expression from responses to pre-formulated questions.

It is said that without the use of valid statistical tools, valid conclusions cannot be drawn from quantitative data. Quantitative data can be analyzed in a number of ways, descriptive and inferential statistical tools being among the most popular.

The research being a multi method research both qualitative and quantitative analysis are applied to analyse data for different objectives.

4.4 Analysis and Interpretation of Data for Objective 1

4.4.1 Data Analysis

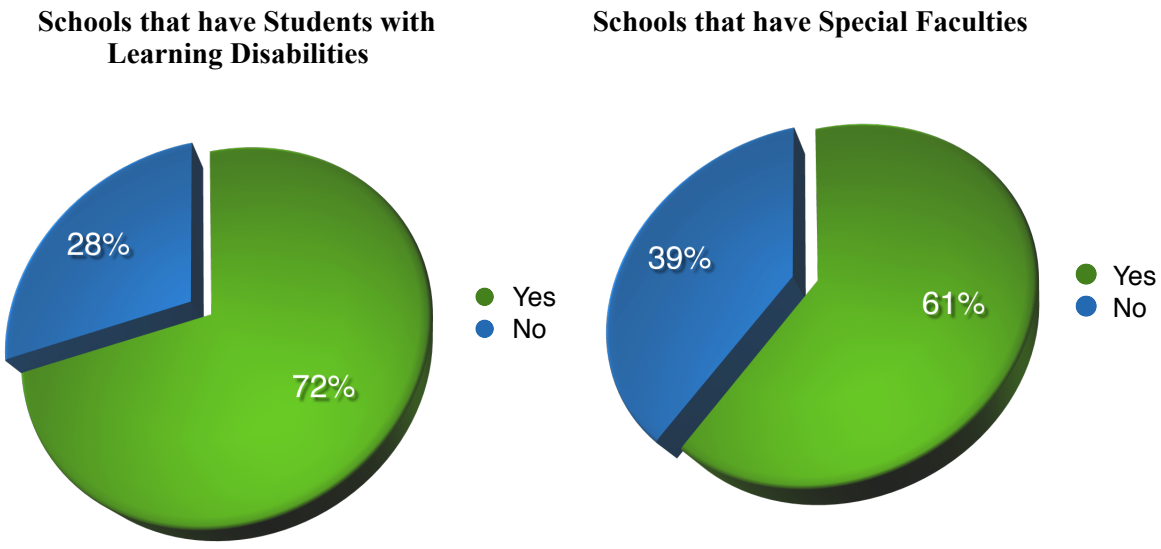
The survey conducted consisted of to the point question to the principals, such as; 'Presently, do you have any students with learning disabilities in your institution?' and 'Total Number of special educators/remedial teachers in your school'

The data obtained from the questionnaire was of qualitative type and from the answers received it can be said that many schools have students with learning disabilities and teachers who are trained to educate such students are required. A further step was taken and the answers received are measured statistically.

4.4.2 Observation

Out of the sample of 18 schools principals that answered the questionnaire, 13 had students with learning disabilities and 11 schools had special educators/ remedial teachers. In terms of percentage 72% of the schools had students with learning disabilities and 31% of the schools had special faculties.

Figure 4.1 Graphical Representation for the data analysis for Objective 1



4.4.3 Conclusion

From the above calculation it was known that the numbers of schools that had students with Learning Disabilities was high and schools need teachers with proper training in order implement inclusive education

4.5 Analysis and Interpretation of Data Objective 3

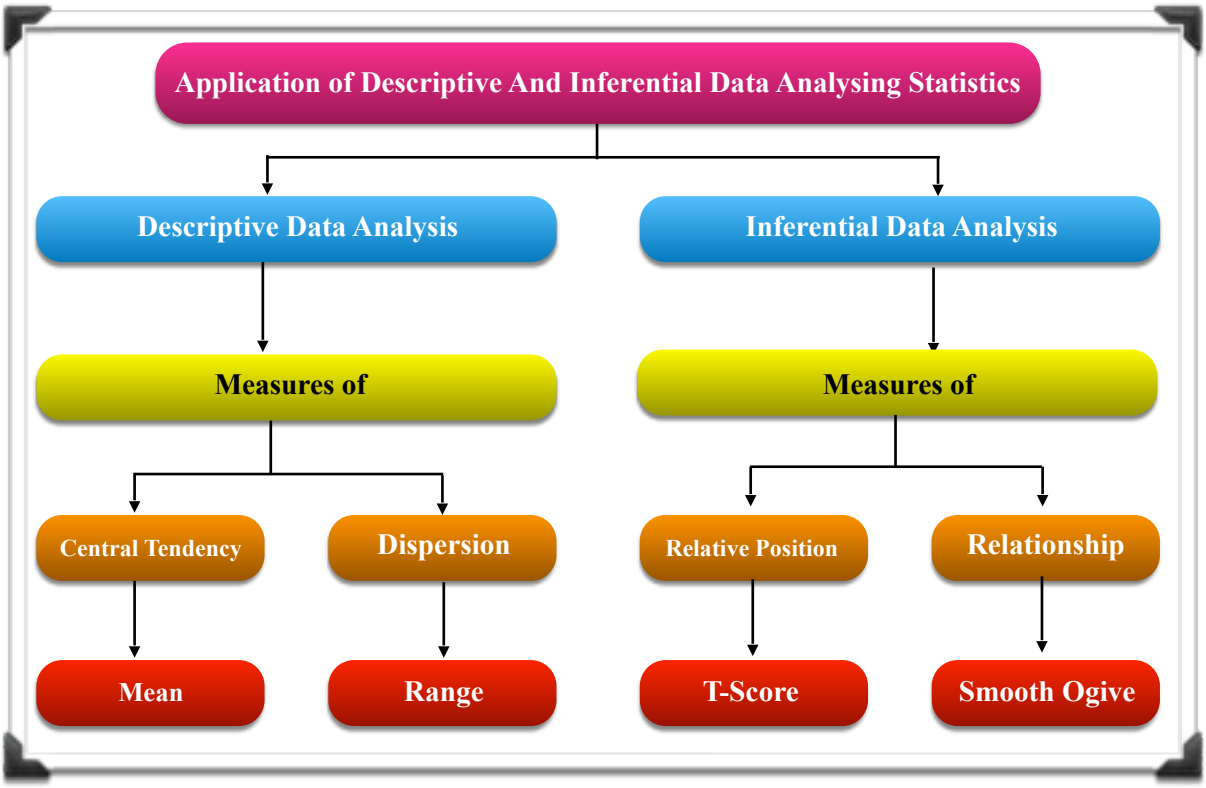
Since objective 3 was the implementation of the training programme, no data analysis could be done for the same.

4.6 Analysis and Interpretation of Data Objective 4

4.6.1 Data Analysis

Objective 4 being 'Finding the effectiveness of the training program in the Learning Disabilities for teachers teaching in general school', a number of descriptive and inferential statistical tools were used. A table was drawn to get a gist of the various tools and techniques applied for drawing conclusions on this objective.

Figure 4.2 Procedure for Data Analysis of Objective 4



4.6.2 Data Organisation

The conventional step that precedes data analysis in applying statistical tool is the statistical data organisation. The collected data was organised in the form of statistical tables of frequency distribution to aid the calculations of analysis. Frequency distribution tables display the frequency of a score of the teachers, divided into mutually exclusive classes. In the tables 'x' represents the midpoint of each class, 'f' is the frequency of each score.

Table 4.1 Data Organisation School A MCQs Pre-Test

Class Interval	X	F	fx	fx^2
18-20	19.00	0.00	0.00	0.00
15-17	16.00	0.00	0.00	0.00
12-14	13.00	0.00	0.00	0.00
9-11	10.00	1.00	10.00	100.00
6-8	7.00	5.00	35.00	1225.00
3-5	2.00	2.00	4.00	16.00
0-2	1.00	0.00	0.00	0.00

Table 4.2 Data Organisation School A MCQs Post-Test

	Class Interval	X	F	fx	fx^2
School A MCQs Post –Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	2.00	32.00	1024.00
	12-14	13.00	1.00	13.00	169.00
	9-11	10.00	4.00	40.00	1600.00
	6-8	7.00	1.00	7.00	49.00
	3-5	2.00	0.00	0.00	0.00
	0-2	1.00	0.00	0.00	0.00

Table 4.3 Data Organisation School A T/F Pre-Test

	Class Interval	X	F	fx	fx^2
School A True or False Pre-Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	4.00	40.00	1600.00
	6-8	7.00	3.00	21.00	441.00
	3-5	2.00	1.00	2.00	4.00
	0-2	1.00	0.00	0.00	0.00

Table 4.4 Data Organisation School A T/F Post-Test

	Class Interval	X	F	fx	fx^2
School A True or False Post-Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	3.00	48.00	2304.00
	12-14	13.00	3.00	39.00	1521.00
	9-11	10.00	1.00	10.00	100.00
	6-8	7.00	1.00	7.00	49.00
	3-5	2.00	0.00	0.00	0.00
	0-2	1.00	0.00	0.00	0.00

Table 4.5 Data Organisation School B MCQs Pre-Test

	Class Interval	X	F	fx	fx^2
School B MCQs Pre-Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	3.00	30.00	900.00
	6-8	7.00	5.00	35.00	1225.00
	3-5	2.00	2.00	4.00	16.00
	0-2	1.00	0.00	0.00	0.00

Table 4.6 Data Organisation School B MCQs Post-Test

	Class Interval	X	F	fx	fx^2
School B MCQs Post-Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	3.00	48.00	2304.00
	12-14	13.00	5.00	65.00	4225.00
	9-11	10.00	1.00	10.00	100.00
	6-8	7.00	1.00	7.00	49.00
	3-5	2.00	0.00	0.00	0.00
	0-2	1.00	0.00	0.00	0.00

Table 4.7 Data Organisation School B T/F Pre-Test

	Class Interval	X	F	fx	fx^2
School B True or False Pre - Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	2.00	20.00	400.00
	6-8	7.00	2.00	14.00	196.00
	3-5	2.00	1.00	2.00	4.00
	0-2	1.00	0.00	0.00	0.00

Table 4.8 School B T/F Post-Test

	Class Interval	X	F	fx	fx^2
School B True or False Post - Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	2.00	32.00	1024.00
	12-14	13.00	4.00	52.00	2704.00
	9-11	10.00	3.00	30.00	900.00
	6-8	7.00	1.00	7.00	49.00
	3-5	2.00	0.00	0.00	0.00
	0-2	1.00	0.00	0.00	0.00

Table 4.9 Data Organisation School C MCQs Pre-Test

	Class Interval	X	F	fx	fx^2
School C MCQs Pre - Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	1.00	10.00	100.00
	6-8	7.00	6.00	42.00	1764.00
	3-5	2.00	3.00	6.00	36.00
	0-2	1.00	0.00	0.00	0.00

Table 4.10 Data Organisation School C MCQs Post-Test

	Class Interval	X	F	fx	fx^2
School C MCQs Post – Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	3.00	39.00	1521.00
	9-11	10.00	4.00	40.00	1600.00
	6-8	7.00	3.00	21.00	441.00
	3-5	2.00	0.00	0.00	0.00
	0-2	1.00	0.00	0.00	0.00

Table 4.11 Data Organisation School C T/F Pre-Test

	Class Interval	X	F	fx	fx^2
School C True or False Pre - Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	1.00	10.00	100.00
	6-8	7.00	6.00	42.00	1764.00
	3-5	2.00	3.00	6.00	36.00
	0-2	1.00	0.00	0.00	0.00

Table 4.12 Data Organisation School C T/F Post -Test

	Class Interval	X	F	fx	fx^2
School C True or False Pre - Test	18-20	19.00	0.00	0.00	0.00
	15-17	16.00	0.00	0.00	0.00
	12-14	13.00	0.00	0.00	0.00
	9-11	10.00	4.00	40.00	1600.00
	6-8	7.00	2.00	14.00	196.00
	3-5	2.00	4.00	8.00	64.00
	0-2	1.00	0.00	0.00	0.00

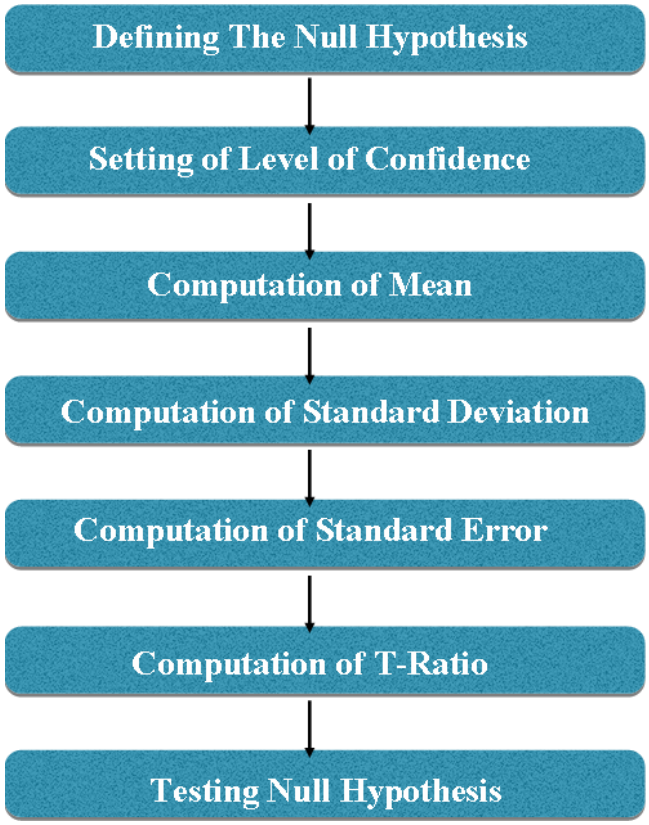
4.6.3 Data Analysis using measures of central tendency

4.6.3.1 Mean

In order to establish that the programme conducted has a favourable impact on the performance of the teachers, the researcher computed the difference between the mean at Pre-test and Post-test; and tested the significance of the difference for null hypothesis at the set level of confidence.

Steps Followed:

Figure 4.3 Steps For Measures of Central Tendency



4.6.3.2 Defining the Null Hypothesis

Null hypothesis is the starting point of determining the significance of difference between the means of scores at pre-test and post-test. A null hypothesis emphasises that there exists no real difference between two means or that the difference between the means is insignificant. If null hypothesis gets rejected, then it can be said that the anxiety factor 'the programme' has affected the achievement of the group (performance of teachers) significantly. The aim of the research was rejection of the null hypothesis as defined in Chapter 1, i.e. "There will be no significant difference in the Post Test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools."

4.6.3.3 Setting of the Level of Confidence

The probability of significance rests on the set level of confidence. The level of confidence set was 0.01 or 1%, i.e. the chances are 99 out of 100, that the null hypothesis did not hold true. Rejection of null hypothesis suo moto approved the Research hypothesis as defined in Chapter 1, i.e. H_0 = False and therefore H_1 was true hence, with 99% surety.

4.6.3.4 Computation of Mean at Pre Test and at Post Test

With regards to research Mean can be explained as the sum of all the values of the scores in the frequency distribution table as divided by the number of scores. It is represented by the symbol M and is mathematically expressed as

$$\sum \boldsymbol{fx} / \mathbf{N}$$

where,

$\boldsymbol{f}$ = frequency of a particular score in the test

$\boldsymbol{x}$= midpoint of class intervals, and

$\boldsymbol{N}$= count of the number of teachers

The computation of mean for different schools expressed in tabular format along with graphical presentation is given below:

Table 4.13 MCQs Pre-Test Mean

School	N	$\sum fx$	$\frac{\sum fx}{N}$
A	8	49	6.13
B	10	69	6.90
C	10	135	5.80

Table 4.14 MCQs Post-Test Mean

School	N	$\sum fx$	$\frac{\sum fx}{N}$
A	8	92	11.50
B	10	130	13.00
C	10	100	10.00

Figure 4.4 Mean MCQs

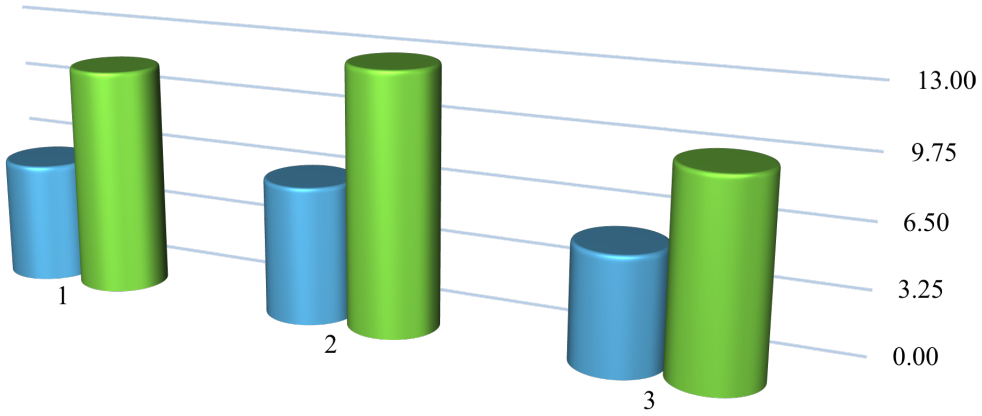


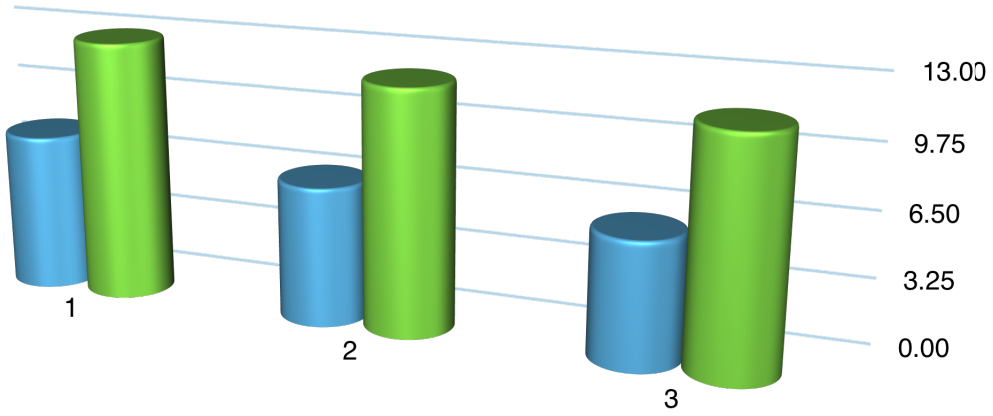
Table 4.15 True or False Pre-Test

School	N	$\sum$ fx	$\frac{\sum fx}{N}$
A	8	63	7.88
B	10	69	6.90
C	10	62	6.20

Table 4.16 True or False Post-Test

School	N	$\sum$ fx	$\frac{\sum fx}{N}$
A	8	104	13.00
B	10	121	12.10
C	10	115	11.50

Figure 4.5 Mean True or False



4.6.3.5 Computation of Standard Deviation for the means at pre-test and at post-test

Standard Deviation is a measure of the dispersion of a set of data from its mean. Standard Deviation is regarded as the most stable and reliable measure of variability as it employs the mean for its computation. It is often called root mean square deviation and is denoted by the Greek letter sigma σ. It is mathematically represented as $\sigma = \sqrt{\frac{\sum fx^2}{N}}$

Where,

N = number of teacher scores,

f = the frequency of a scores and,

x = the deviation of each score from the mean.

Computation of Standard Deviation for different schools is given in table below:

Table 4.17 Standard Deviation for MCQs

Particulars		N	$\sum fx^2$	$\frac{\sum fx^2}{n}$	$\frac{\sqrt{\sum fx^2}}{N}$
School A	Pre Test	8	52.88	6.61	2.57
	Post Test	8	72.00	9.00	3.00
School B	Pre Test	10	76.90	7.69	2.77
	Post Test	10	72.00	7.20	2.68
School C	Pre Test	10	69.60	6.96	2.64
	Post Test	10	54.00	5.40	2.32

Table 4.18 Standard Deviation True or False

Particulars		N	$\sum fx^2$	$\frac{\sum fx^2}{n}$	$\frac{\sqrt{\sum fx^2}}{N}$
School A	Pre Test	8	54.88	6.86	2.62
	Post Test	8	72.00	9.00	3.00
School B	Pre Test	10	76.90	7.69	2.77
	Post Test	10	72.90	7.29	2.70
School C	Pre Test	10	121.60	12.96	3.60
	Post Test	10	94.60	9.45	3.07

4.6.3.6 Computation of Standard Error for the Standard Deviations

Standard Error of the Standard Deviation is computed for use as a yardstick for testing the significance of the mean. It is represented by ' SE_D' and is mathematically given as $SE_D = \sqrt{(\sigma(M_1) + \sigma(M_2) - 2r \sigma((M_1) \sigma(M_2)}$

Where,

$\sigma(M_1)$ = Standard Deviation of the mean at Pre Test

$\sigma(M_2)$ = Standard Deviation of the mean at Pre Test, and

r = coefficient of correlation.

4.6.3.7 Coefficient of correlation

Pre-test and post-test was carried on with the same number and same set of teachers and hence there exists a relationship between the scores at pre-test and post-test.

The degree of relationship between the two sets of scores pre-test and post-test is expressed with the index "coefficient of correlation". It expresses the extent to which changes in one score of a teacher in the pre-test was accompanied by the scores of the teachers in the post-test thus taking the extent of relationship into account, while determining the impact of the teacher training programme.

For this research the Product Moment Method of Computation of coefficient of correlation is implemented. The coefficient of correlation is designated by 'r'. It is mathematically represented as $r = \frac{\sum xy}{N\sigma 1\sigma 2}$

Where

x = deviation of a Pre Test score from the mean of the Pre Test,

y = deviation of a Post Test score from the mean of the Post Test,

N = number of teachers,

σ_1 = standard deviation at Pre Test and,

σ_2 = standard deviation at Post Test

Computation of *standard error* is shown in then table below:

Table 4.19 School A – Multiple Choice Questions Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	xy
1	4.00	9.00	-2.13	-2.50	5.31
2	7.00	16.00	0.88	4.60	3.94
3	8.00	17.00	1.88	5.50	10.31
4	5.00	8.00	-1.13	-3.50	3.94
5	9.00	14.00	2.88	2.50	7.19
6	6.00	9.00	-0.13	-2.50	0.31
7	7.00	11.00	0.88	-0.50	-0.44
8	6.00	9.00	-0.13	-2.50	0.31
Total			∑x 3	∑y 1	∑xy 30.88

Table 4.20 School B – Multiple Choice Questions Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	Xy
1	8.00	14.00	1.10	1.00	1.10
2	7.00	13.00	0.10	0.00	0.00
3	5.00	14.00	-1.90	1.00	-1.90
4	7.00	16.00	0.10	3.00	0.30
5	9.00	13.00	2.10	0.00	0.00
6	11.00	17.00	4.10	4.00	16.40
7	10.00	15.00	3.10	2.00	6.20
8	7.00	11.00	0.10	-2.00	-0.20
9	8.00	12.00	1.10	-1.00	-1.10
10	5.00	8.00	1.90	-5.00	9.50
Total			Total	∑x 8	∑y 30.30

Table 4.21 School C - Multiple Choice Questions Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	Xy
1	6.00	9.00	0.20	-1.00	-0.20
2	8.00	12.00	2.20	2.00	4.40
3	6.00	9.00	0.20	-1.00	-0.20
4	5.00	8.00	-0.80	-2.00	1.60
5	10.00	14.00	4.20	4.00	16.80
6	5.00	8.00	-0.80	-2.00	1.60
7	6.00	9.00	0.20	-1.00	-0.20
8	7.00	11.00	1.20	1.00	1.20
9	8.00	12.00	2.20	2.00	4.40
10	5.00	8.00	-0.80	-2.00	1.60
Total			∑x 8	∑y 0	∑xy 31

Table 4.22 School A - True or False Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	Xy
1	7.00	12.00	-0.88	-1.00	0.88
2	9.00	15.00	1.13	2.00	2.25
3	10.00	14.00	2.13	1.00	2.13
4	6.00	9.00	-1.88	-4.00	7.50
5	5.00	8.00	-2.88	-5.00	14.38
6	11.00	17.00	3.13	4.00	12.50
7	10.00	15.00	2.13	2.00	4.25
8	8.00	12.00	0.13	-1.00	-0.13
Total			∑x 3	∑y -2	∑xy 43.75

Table 4.23 School B - True or False Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	Xy
1	8.00	16.00	1.10	3.90	4.29
2	4.00	10.00	-2.90	-2.10	6.09
3	10.00	15.00	3.10	2.90	8.99
4	9.00	13.00	2.10	0.90	1.89
5	6.00	12.00	-0.90	-0.10	0.09
6	8.00	12.00	1.10	-0.10	-0.11
7	6.00	10.00	-0.90	-2.10	1.89
8	9.00	14.00	2.10	1.90	3.99
9	6.00	9.00	-0.90	-3.10	2.79
10	5.00	8.00	-1.90	-4.10	7.79
Total			∑x 2	∑y -2	∑xy 37.30

Table 4.24 School C - True or False Computation of ∑xy

Teacher	Pre Test Score	Post Test Score	X	Y	Xy
1	10.00	15.00	3.80	3.50	13.30
2	9.00	14.00	2.80	2.50	7.00
3	5.00	8.00	-1.20	-3.50	4.20
4	5.00	6.00	-1.20	-5.50	6.60
5	7.00	12.00	0.80	0.50	0.40
6	5.00	10.00	-1.20	-1.50	1.80
7	9.00	14.00	2.80	2.50	7.00
8	10.00	15.00	3.80	3.50	13.30
9	6.00	10.00	-0.20	-1.50	0.30
10	4.00	11.00	-2.20	-0.50	1.10
Total			∑x 8	∑y 0	∑xy 55

4.6.3.8 Standard Error

The term "standard error" is used to refer to the standard deviation of various sample statistics such as the mean or median. For example, the "standard error of the mean" refers to the standard deviation of the distribution of sample means taken from a population. The smaller the standard error, the more representative the sample will be of the overall population.

The standard error is also inversely proportional to the sample size; the larger the sample size, the smaller the standard error because the statistic will approach the actual value.

The standard error is considered part of descriptive statistics. It represents the standard deviation of the mean within a dataset. This serves as a measure of variation for random variables, providing a measurement for the spread. The smaller the spread, the more accurate the dataset is said to be.

Table 4.25 Standard Error MCQs

Particulars	School		
	A	B	C
N	8.00	10.00	10.00
σ_1	2.57	2.77	2.64
σ_2	3.00	2.68	2.32
Root of N	2.83	3.16	3.16
$\frac{\sigma_1 = \sigma_{m1}}{\sqrt{n}}$	0.91	0.88	0.83
$\frac{\sigma_2 = \sigma_{m2}}{\sqrt{n}}$	1.06	0.85	0.73
R	0.50	0.41	0.51
$2 r \sigma_{m1} \sigma_{m2}$	0.96	0.61	0.62
$(\sigma_{m1})^2$	0.83	0.77	0.70
$(\sigma_{m2})^2$	1.13	0.72	0.54
$(\sigma_{m1})^2 + (\sigma_{m2})^2$	1.95	1.49	1.24
$(\sigma_{m1})^2 + (\sigma_{m2})^2 - 2 r \sigma_{m1} \sigma_{m2}$	0.99	0.88	0.62
$\sqrt{(\sigma_{m1})^2 + (\sigma_{m2})^2 - 2 r \sigma_{m1} \sigma_{m2}} = \sigma_{SE}$	0.99	0.94	0.78

Table 4.26 Standard Error True or False

Particulars	School		
	A	B	C
N	8.00	10.00	10.00
σ_1	2.62	2.77	3.60
σ_2	3.00	2.70	3.07
N	2.83	3.16	3.16
$\frac{\sigma_1}{\sqrt{n}} = \sigma_{m1}$	0.93	0.88	1.14
$\frac{\sigma_2}{\sqrt{n}} = \sigma_{m2}$	1.06	0.85	0.97
R	0.70	0.50	0.50
$2 r \sigma_{m1} \sigma_{m2}$	1.37	0.75	1.10
$(\sigma_{m1})^2$	0.86	0.77	1.30
$(\sigma_{m2})^2$	1.13	0.73	0.95
$(\sigma_{m1})^2 + (\sigma_{m2})^2$	1.98	1.50	2.24
$(\sigma_{m1})^2 + (\sigma_{m2})^2 - 2 r \sigma_{m1} \sigma_{m2}$	0.62	0.74	1.14
$\sqrt{(\sigma_{m1})^2 + (\sigma_{m2})^2 - 2 r \sigma_{m1} \sigma_{m2}} = \sigma_{SE}$	0.78	0.86	1.07

4.6.3.9 Computation of T-Ratio

T-ratio was the final step for determining whether the programme conducted was favourably or adversely significant. It was computed using the formula

$$\frac{D}{\sigma_D}$$

Where D is the difference between the means at pre-test and post-test and

σ_D = Standard error of the difference between the Standard Deviation at pre-test and post-test.

The t-ratio, so calculated is compared with the critical value of t at '0.01' level of significance for 'N-1' degree of freedom, N being number of teachers. If the computed t-ratio crosses the critical value then it is said that the difference between the mean at pre-test and post-test is trustworthy and real.

Using the table of critical values of t with '7', '9' and '9' degrees of freedom for the School A, School B and School C respectively at 1% level of significance is given in the tables below:

Table 4.27 t ratio MCQs

Particulars	Mean Pre-Test 'M_1'	Mean Post-Test 'M_2'	$M_1 - M_2$	σ_{SE}	t ratio
School A	6.13	11.50	5.38	0.99	5.14
School B	6.90	13.00	6.10	0.94	6.49
School C	5.80	10.00	4.20	0.78	5.35

Table 4.28 t ratio True or False

Particulars	Mean Pre-Test 'M_1'	Mean Post-Test 'M_2'	$M_1 - M_2$	σ_{SE}	t ratio
School A	7.88	13.00	5.13	0.78	6.53
School B	6.90	12.10	5.20	0.86	6.03
School C	6.20	11.50	5.30	1.07	4.96

4.6.3.10 Observation

The mean of the scores at pre-test was higher than that at post-test. The t ration calculated for MCQ and True or false exceeded the critical values for multiple choice questions. The critical value at 7, 9 and 9 degrees of freedom for School A, School B and School C respectively and the t ratio is as follows:

Table 4.29 Critical Values

	MCQs			True or False		
	School A	School B	School C	School A	School B	School C
Degree of freedom	7	9	9	7	9	9
Critical value	2.998	2.8214	2.8214	2.998	2.8214	2.8214

4.6.3.11 Inference

The T-Ratio so computed for the three schools exceeded the critical values of t in the table, rejecting the null hypothesis.

From the above calculations it is inferred that the significance in the improvement in the performance of teachers in the post-test was real and cannot be attributed to chance factors or sampling fluctuations.

4.6.3.12 Conclusion

Null hypothesis is rejected and hence the research hypothesis holds true. There was an increase in the post-test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools.

4.6.4 Data Analysis using measures of spread or dispersion

4.6.4.1 Range

The range, the simplest method of dispersion is the difference between the highest and the lowest scores. In the present research range of pre-test and

post-test scores were comparatively analysed. The range is the simple function of the maximum and minimum, representing the dispersion of the pre-test and post-test scores. The minimum and maximum range of the schools were as follows:

Table 4.30 Range

	MCQs			True or False		
	School			School		
	A	B	C	A	B	C
Min.	4	8	5	9	13	8
Max.	8	9	10	17	16	17

4.6.4.2 Observations

A graph has been plotted of all scores of teacher at pre-test and post-test. The line of post-test is significantly higher than that of pre-test for all.

Figure 4.6 Range of School A

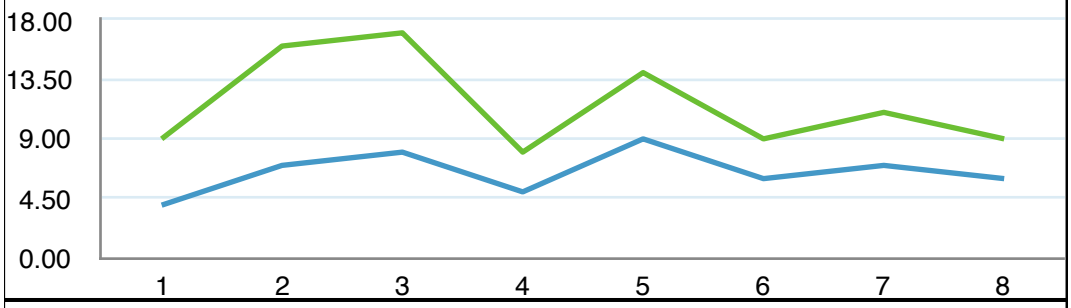


Figure 4.7 Range of School B

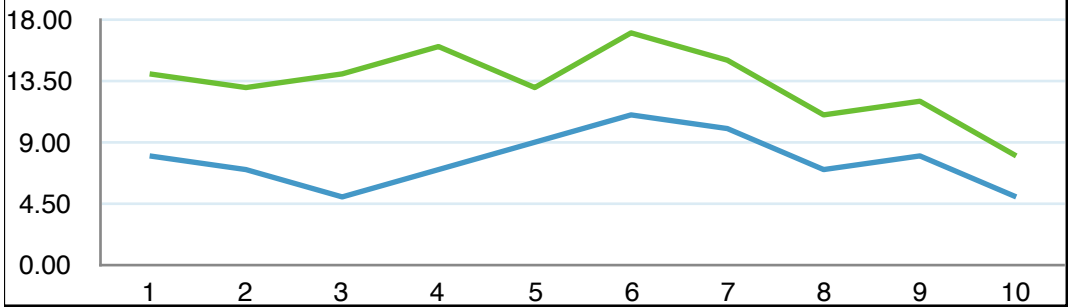
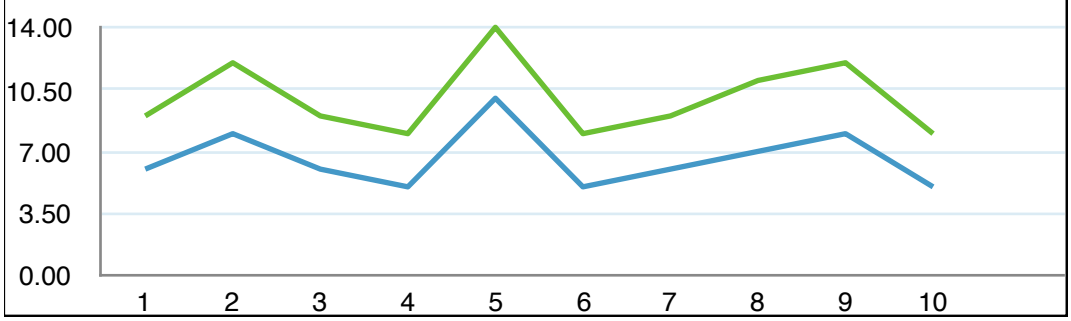


Figure 4.8 Range of School C



4.6.4.3 Inference

The performance of the teachers in terms of scores varied from 4 to 10 at pre-test, while it ranged from 8 to 17 at post-test. It was deduced that the performance of teachers after the programme was better than the performance of the performance of the teachers before the programme.

4.6.4.4 Conclusion

The results obtained indicate that the programme of imparting knowledge to teachers was successful.

4.6.5 Data Analysis using measures of relation

4.6.5.1 T-Score

From the educational pre-test and post-test, numerical scores of the teachers were obtained for assessing the ability and knowledge of the teachers at the two tests. However it is known that the mere knowledge of the raw scores obtained are quiet insufficient to make intra-individual comparison. Hence the raw scores were converted into standard T-scores for intra-individual comparison.

In order to compare the cumulative improvement at post-test, the researcher had assessed the performance of all teachers from the three schools together.

Firstly a T Scale for the scores of all 28 teachers at pre-test and post-test was constructed by preparing a simulation table. A graph has been plotted with the T Scale on X axis and frequency of scores on Y axis. A linear equation was formed from the plotted graph and derived. The liner equation thus formed was solved to get the t score.

4.6.5.2 Computation of T Scale

Table 4.31 T scale MCQs Pre-Test

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	T Scale Score
18-20	19.00	0.00	28.00	28.00	100.00	5.00
15-17	16.00	0.00	28.00	28.00	100.00	5.00
12-14	13.00	0.00	28.00	28.00	100.00	5.00
9-11	10.00	6.00	28.00	25.00	89.00	1.23
6-8	7.00	16.00	22.00	14.00	64.00	0.36
3-5	2.00	6.00	6.00	3.00	50.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	-5.00

Table 4.32 T scale MCQs Post-Test

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	T Scale Score
18-20	19.00	0.00	28.00	28.00	100.00	5.00
15-17	16.00	0.00	28.00	28.00	100.00	5.00
12-14	13.00	0.00	28.00	28.00	100.00	5.00
9-11	10.00	12.00	28.00	22.00	79.00	0.81
6-8	7.00	10.00	16.00	11.00	69.00	0.50
3-5	2.00	6.00	6.00	3.00	50.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	-5.00

Table 4.33 T scale True or False Pre-Test

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	T Scale Score
18-20	19.00	0.00	28.00	28.00	100.00	5.00
15-17	16.00	0.00	28.00	28.00	100.00	5.00
12-14	13.00	0.00	28.00	28.00	100.00	5.00
9-11	10.00	6.00	28.00	25.00	89.00	0.81
6-8	7.00	16.00	22.00	14.00	64.00	0.50
3-5	2.00	6.00	6.00	3.00	50.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	-5.00

Table 4.34 T scale True or False Post-Test

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	T Scale Score
18-20	19.00	0.00	28.00	28.00	100.00	5.00
15-17	16.00	7.00	28.00	24.60	88.00	1.18
12-14	13.00	12.00	21.00	15.00	71.00	0.56
9-11	10.00	6.00	9.00	6.00	67.00	0.44
6-8	7.00	3.00	3.00	1.50	50.00	0.00
3-5	2.00	0.00	0.00	0.00	0.00	-5.00
0-2	1.00	0.00	0.00	0.00	0.00	-5.00

4.6.5.3 Observation

For multiple choice question the t score for pre-test is 0.062 and for post-test was 0.105 and for True or False the t score at pre-test was 0.067 and at post-test was 0.087.

4.6.5.4 Inference

The T Score at Post Test was higher than that at pre-test for MCQs and True or False confirming that the performance of the teachers was better at post-test.

The t score indicates the average intra-individual improvement of the teachers at post-test.

4.6.5.5 Conclusion

The teaching programme implemented by the researcher has intra-individually enhanced the ability and knowledge of the teacher. There is an intra-individual improvement in the performance of the teachers

4.6.6 Measure of Relative Position

4.6.6.1 Smooth Ogive

The cumulative percentage frequency ogive represents the cumulative percentage frequency distribution by plotting the mid points of the class intervals on the X axis and the respective cumulative percentage frequencies of these class intervals on the Y axis. An ogive provides quick and easy overall comparison of frequency distribution.

To study the performance of teachers in both MCQs and True or False as a whole the researcher had combined the scores of MCQs and True or False of the teachers for this test.The researcher has prepared a smoothed ogive, i.e. the irregularities of the frequencies are safely removed by the process of smoothing.

The formula for smoothed frequency of a class interval is 1/3 (Frequency of given class interval + Frequencies of the two adjacent class intervals). The task of understanding and interpretation of data becomes simple, accurate and practicable with the help of such smoothing of frequencies.

To study the overall improvement of teacher at post-test, the score of the teachers on MCQ’s and true or false has been combined and improvement tested school wise.

The tables below show the computation of smoothed frequencies -

Table 4.35 School A Smoothed Ogive MCQs

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	3.00	3.00	100.00	100.00
33-35	34.00	0.00	3.00	3.00	100.00	100.00
30-32	31.00	0.00	3.00	3.00	100.00	100.00
27-29	28.00	0.00	3.00	3.00	100.00	100.00
24-26	25.00	0.00	3.00	3.00	100.00	100.00
21-23	22.00	0.00	3.00	3.00	100.00	94.44
18-20	19.00	1.00	3.00	2.50	83.33	86.11
15-17	16.00	1.00	2.00	1.50	75.00	86.11
12-14	13.00	0.00	1.00	1.00	100.00	75.00
9-11	10.00	1.00	1.00	0.50	50.00	50.00
6-8	7.00	0.00	0.00	0.00	0.00	16.67
3-5	2.00	0.00	0.00	0.00	0.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	0.00

Table 4.36 School B Smoothed Ogive MCQs

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	3.00	3.00	100.00	100.00
33-35	34.00	0.00	3.00	3.00	100.00	100.00
30-32	31.00	0.00	3.00	3.00	100.00	88.89
27-29	28.00	2.00	3.00	2.00	66.67	88.89
24-26	25.00	0.00	1.00	1.00	100.00	88.89
21-23	22.00	0.00	1.00	1.00	100.00	83.33
18-20	19.00	1.00	1.00	0.50	50.00	50.00
15-17	16.00	0.00	0.00	0.00	0.00	16.67
12-14	13.00	0.00	0.00	0.00	0.00	0.00
9-11	10.00	0.00	0.00	0.00	0.00	0.00
6-8	7.00	0.00	0.00	0.00	0.00	0.00
3-5	2.00	0.00	0.00	0.00	0.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	0.00

Table 4.37 School C Smoothed Ogive MCQs

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	5.00	5.00	100.00	100.00
33-35	34.00	0.00	5.00	5.00	100.00	100.00
30-32	31.00	0.00	5.00	5.00	100.00	100.00
27-29	28.00	0.00	5.00	5.00	100.00	100.00
24-26	25.00	0.00	5.00	5.00	100.00	100.00
21-23	22.00	0.00	5.00	5.00	100.00	100.00
18-20	19.00	0.00	5.00	5.00	100.00	100.00
15-17	16.00	0.00	5.00	5.00	100.00	86.67
12-14	13.00	4.00	5.00	3.00	60.00	86.67
9-11	10.00	0.00	1.00	1.00	100.00	70.00
6-8	7.00	1.00	1.00	0.50	50.00	50.00
3-5	2.00	0.00	0.00	0.00	0.00	16.67
0-2	1.00	0.00	0.00	0.00	0.00	0.00

Table 4.38 School A Smoothed Ogive True or False

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	5.00	5.00	100.00	100.00
33-35	34.00	0.00	5.00	5.00	100.00	100.00
30-32	31.00	0.00	5.00	5.00	100.00	96.67
27-29	28.00	1.00	5.00	4.60	90.00	88.33
24-26	25.00	2.00	4.00	3.00	75.00	80.00
21-23	22.00	1.00	2.00	1.50	75.00	66.67
18-20	19.00	1.00	1.00	0.50	50.00	41.67
15-17	16.00	0.00	0.00	0.00	0.00	16.67
12-14	13.00	0.00	0.00	0.00	0.00	0.00
9-11	10.00	0.00	0.00	0.00	0.00	0.00
6-8	7.00	0.00	0.00	0.00	0.00	0.00
3-5	2.00	0.00	0.00	0.00	0.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	0.00

Table 4.39 School B Smoothed Ogive True or False

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	20.00	20.00	100.00	100.00
33-35	34.00	0.00	20.00	20.00	100.00	100.00
30-32	31.00	0.00	20.00	20.00	100.00	100.00
27-29	28.00	0.00	20.00	20.00	100.00	100.00
24-26	25.00	0.00	20.00	20.00	100.00	100.00
21-23	22.00	0.00	20.00	20.00	100.00	97.50
18-20	19.00	3.00	20.00	18.50	92.50	87.70
15-17	16.00	10.00	17.00	12.00	70.59	85.32
12-14	13.00	1.00	7.00	6.50	92.86	71.15
9-11	10.00	6.00	6.00	3.00	50.00	47.62
6-8	7.00	0.00	0.00	0.00	0.00	16.67
3-5	2.00	0.00	0.00	0.00	0.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	0.00

Table 4.40 School C Smoothed Ogive True or False

Class Interval	Mid Point	Frequency	Cumulative Frequency	Cumulative Frequency to Mid Point	Cumulative % Frequency to Mid Point	Smoothed Frequencies
36-38	37.00	0.00	20.00	20.00	100.00	100.00
33-35	34.00	0.00	20.00	20.00	100.00	100.00
30-32	31.00	0.00	20.00	20.00	100.00	99.17
27-29	28.00	1.00	20.00	19.50	97.50	97.41
24-26	25.00	2.00	19.00	18.00	94.74	89.57
21-23	22.00	8.00	17.00	13.00	76.47	84.85
18-20	19.00	3.00	9.00	7.50	83.33	78.27
15-17	16.00	3.00	6.00	4.60	75.00	75.00
12-14	13.00	2.00	3.00	2.00	66.67	63.89
9-11	10.00	1.00	1.00	0.50	50.00	38.89
6-8	7.00	0.00	0.00	0.00	0.00	16.67
3-5	2.00	0.00	0.00	0.00	0.00	0.00
0-2	1.00	0.00	0.00	0.00	0.00	0.00

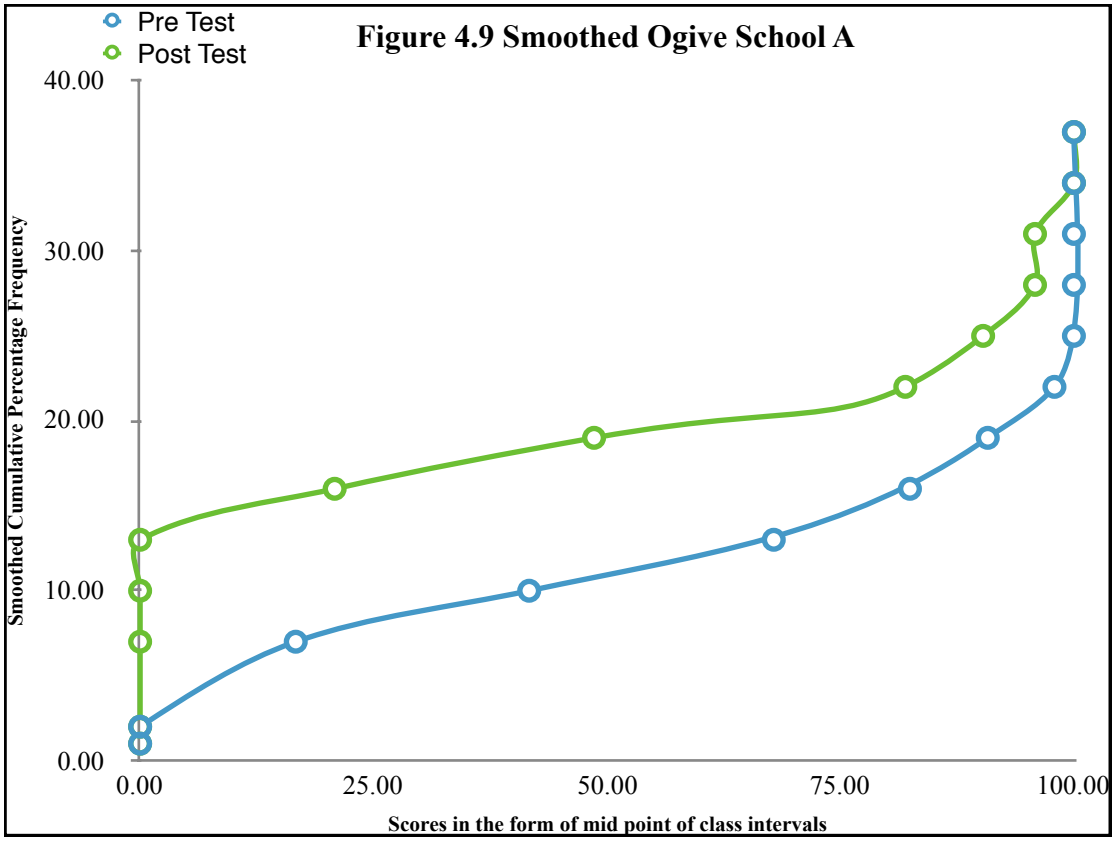


Figure 4.9 Smoothed Ogive School A

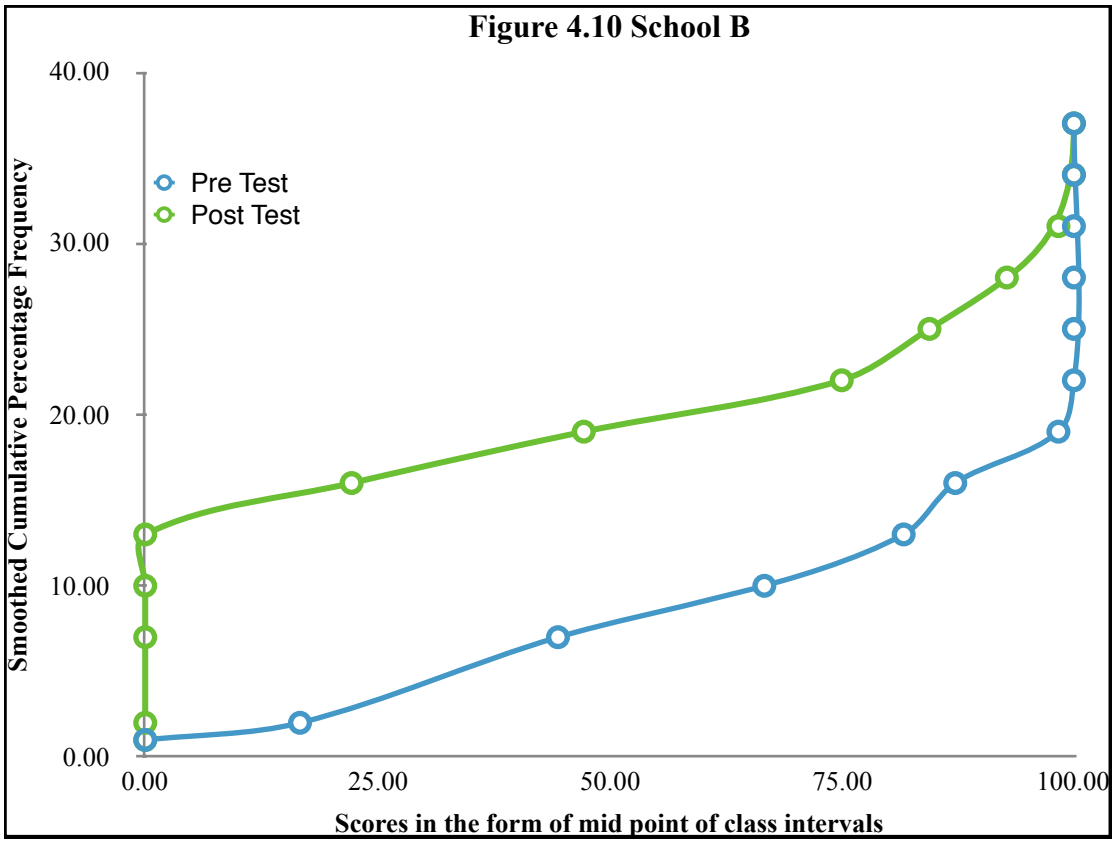
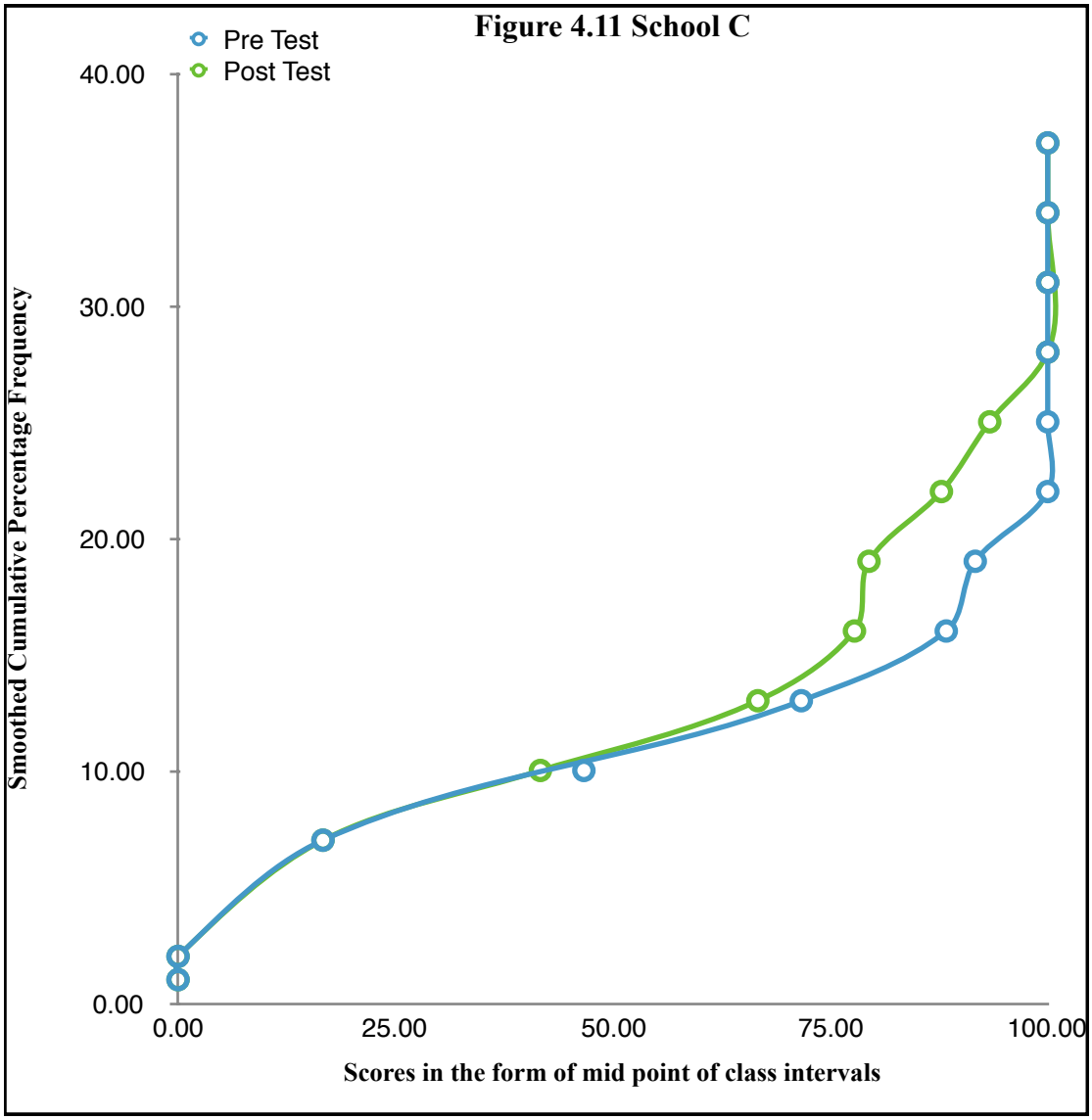


Figure 4.10 School B

Figure 4.11 School C



4.6.6.2 Observations

The lowest scores at pre-test fall into lower classes as compared to classes in which the lowest scores at post-test fall. The same can be said for the highest scores.

4.6.6.3 Inference

Since both the lowest and highest scores of teachers at pre test were contained in a lower class as compared to that in post test, the performance of each teacher has been better at post-test than at pre-test.

4.6.6.4 Conclusion

The training programme was favourably effective on the intra-individual performance of the teachers.

4.6.7 Skill Assessment

The researcher conducted various practical assignments during the teacher training program such as -

1. Behavioural Modification
2. Checklist
3. Informal Assessment Battery
4. IEP

The performance of the teachers on these assignments were graded by the researcher so as to test whether the training programme helped the teacher to grasp the practical aspects of the training programme and develop the skill to practically apply the knowledge gained by the training programme.

4.6.7.1 Grading

The researcher graded the teachers on each of the activities. The grades obtained were as follows -

Table 4.41 Grading

Teachers	Behavioral Modification	Checklist	Informal Battery Assessment	IEP
1	B	A	A	B
2	B	A	A	B
3	C	A	B	C
4	B	A	A	A
5	C	B	B	B
6	A	B	A	B
7	B	A	A	B
8	C	B	B	C
9	C	A	B	C
10	B	A	A	B
11	A	A	A	B
12	C	B	B	C
13	B	A	B	B

14	B	A	B	B
15	C	B	A	C
16	A	A	A	A
17	B	A	B	B
18	A	A	A	B
19	C	B	B	B
20	A	A	B	A
21	B	A	B	A
22	A	A	B	A
23	C	A	B	C
24	C	B	A	C
25	A	A	B	A
26	C	A	B	C
27	C	B	A	C
28	B	A	B	B

4.6.7.2 Observation

The average grades of the teachers for the practical assignments were as follows:

Table 4.42 Observation

Teachers	Average Grades
1	A
2	B
3	B
4	A
5	B
6	B
7	A
8	C
9	B
10	A
11	A
12	C
13	B

14	B
15	B
16	A
17	B
18	A
19	B
20	A
21	A
22	A
23	B
24	B
25	A
26	B
27	B
28	B

4.6.7.3 Inference

The number of teachers that achieved grades A and B were high, where as there were no teachers that were graded D. The following table gives the summary of the grades achieved by the teachers -

Table 4.43

Grade A	Grade B	Grade C	Grade D
11	15	2	0

4.6.7.4 Conclusion

On the basis of the average grades of the teachers it can be concluded that the training programme helped the teacher to grasp the practical skill on the topics of Behavioural Modification, Checklist, Informal Assessment Battery and IEP.

4.7 Data Analysis for Objective 5

4.7.1 Overall Qualitative feedback about usability

Objective 5 required to put the developed teacher training programme under usability test for which a feedback and responses of teachers were taken and analysed to make sure that the developed teacher training programme is fit to use.

4.7.2 Data Analysis

The qualitative responses of the teachers were converted into qualitative data as follows:

Table 4.44 Usability Analysis

Quality Component	Statement	Percentage Obtained	Average Percentage
Learnability	Easy learn – ability of usage of the Teacher Training Programme	90%	90%
Efficiency	Teacher training programme is efficient	100%	97.6%
	The theoretical base of the training programme is efficient to train teachers	93%	
	Manual is self-explanatory	100%	
Memorability	Appropriate sequencing of sessions	95%	94%
	Use of instructional techniques	92%	
	Procedure of different sessions were easy to follow and understand	95%	
Objectivity	Achievement of the objective of the training	92%	91%
	Goal Achievement	95%	

Satisfaction	The overall presentation of the training Training as a useful tool for the users in a practical setting for dealing with children with Learning Disabilities (Dyslexia)	100% 98%	99%
Total percentage of usability of the Training Programme		**94.82%**	

4.7.3 Observation

From the above mentioned analysis its is observed that the usability of the Teacher Training Programme is as follows:

Table 4.45 Usability Test

Sr. No	Usability Component	Average	Total Percentage
1	**Learn ability**	**90**	**94.82%**
2	**Efficiency**	**97.6**	
3	**Memorability**	**94**	
4	**Objectivity**	**91**	
5	**Satisfaction**	**99**	

4.7.4 Inference

All usability components of the Teacher Training Programme- Learn ability, Efficiency, Memorability, Objectivity, Satisfaction is excellent.

4.7.5 Analysis of expert comments and suggestions about the usability of the Teacher Training Program

- The teacher training program is apt.
- The techniques explained in the training programme are convenient and practical.
- The teacher training programme is logically sequenced
- The activities of the training programme are relevant and expedient.

4.7.6 Suggestions about the Teacher Training Program

The teacher training programme should be made for teachers of other subjects and such training should be provided in other languages too.

4.7.7 Conclusion

The Teacher Training Program is helpful and proficient.

CHAPTER 5

SUMMARY FINDINGS AND CONCLUSIONS

CHAPTER 5

SUMMARY FINDINGS AND CONCLUSIONS

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CHAPTER 5

SUMMARY FINDINGS AND CONCLUSIONS

5.1 Summary of the Study

Learning Disabilities is a multi-dimensional construct. It encompasses the usual perception of children merely facing difficulties in studying and dwells in the domains of multiple issues faced by the child. The co-morbidities, secondary manifestations of other disabilities, behavioural and socio-educational challenges impair the morale of the child beyond the scope of studies that were intended. In a day-to-day, average, classroom, there is a growing number of children, which have some or the other form, of Learning Disabilities. It may vary in its degree or extent, but it is present.

In the contemporary form of schooling, any child with the slightest detectable form of disability, is sent to the special educator/counsellor, for "remediation/ remedial teaching". This hampers the learning process of the child and instead of "inclusion", which is the prima-facie aim of the present-day educational system, it "excludes" the student. To avoid the ill effects of such exclusion on the learning process of the child the education system introduced inclusive education. Inclusive Education is the system in which students with and without disabilities learn together in the same classroom.

Teachers are the most essential component to ensure the quality of disabled student's inclusion in the school environment. The role of a teacher is crucial in determining a student's experience in the mainstream classroom and hence it is important to ensure that teachers possess the skill and knowledge required to provide quality education to children with diverse needs in the mainstream classroom.

The researcher had felt the need of developing a training programme that would enable the teachers to acquire skills and knowledge in order to improvise the quality of education for disabled students in mainstream classrooms. The programme developed is a knowledge as well as skill based programme, that aims

at imparting knowledge and skills regarding identification and strategies with respect to disabled students and inclusive education. The purpose of the research can be defined as developing a training programme for teachers and study its effectiveness.

5.2 Background

As we know that the teaching learning process has covered more ground in the past two decades, than it had since its inception. Earlier, owing to the lack of a better understanding, the educational system, the concept of a classroom, a general teaching system, etc., was formed based on the basic and prevalent best practices of the time. With the passage of time and a better understanding of the complexities within the teaching-learning system as well as the classroom dynamics, a varied category of modules were thought of and introduced into the educational teacher training system. These equipped the teacher trainees with a better grasp of the classrooms that they were to teach in. These tools enabled the teachers to effectively make the students understand the subject at hand.

A paradigm shift within this system occurred around the late 1800's, around 1877 to be precise, when the first observations about learning difficulties were discussed in the academic research world. Though there was no considerable headway made into this section till the 1960's, once academic research showed a significant prevalence of learning difficulties within the general classroom, accommodations, techniques, strategies and other support systems were made a part of standard teacher training programme.

In India, even though there has been an inherent following of the global research on learning difficulties, the teacher training programmes remained by and large, unaffected by these developments. In 1995, the "Equal Opportunities and Rights of Persons with Disabilities ACT" 1995, rule 26, was introduced. This act spoke about the "education of children with disabilities up to the age of 18 years in an appropriate environment". It was a landmark legislation for the disabled in general. but, unfortunately, Learning Disability is not mentioned anywhere in this Act. With the introduction of the Sarva Shiksha Abhiyaan, in 2000-2001, a sea of

change was observed with programs, projects, policy and educational systems, which brought the concept of inclusion, special needs, learning difficulties/ disabilities, to the forefront.

5.3 Importance of the Research

In the contemporary classroom scenario, there is very little support that exists for a general teacher, to understand, let alone teach, a student with Learning Disabilities. The teacher training colleges/ programmes, do not have enough details for the teacher trainee to comprehend the enormity of the challenge that they are likely to face, when they encounter a child who cannot read or write, or comprehend instructions, calculations, etc. This interrupts the primary communication channel, which is the backbone of the teaching-learning process. To understand the present situation in the schools, it is necessary to have a look at the situation from the person who is the most accountable, towards the quality of teaching and students performance in the school: the Principal. The Principals' perspective has given us an overview of the teacher's capabilities, the willingness of the institution for a change and the vision towards which, the institutional machinery is committed. This was easier said than done, because to gather a consensual research of school principals, needed them to allocate time, which was difficult, and to get a fairly large number to understand and obtain an average rating of where the trend is headed. This also required a fairly valid questionnaire/ assessment instrument, which could gather most of the data, without taking much time, and present a demographically vivid picture to analyse. This questionnaire was prepared with meticulous details being finely adjusted to ensure effectiveness of what the researcher wanted to measure.

The research did yield a base guideline for the training programme to be built on. The extent of depth that the training content should have, in order for it to benefit the teacher, gained significant insights from the Principals' perspective. The target subject teachers, were trained to develop a method of alternative communications, such as accommodations, techniques, strategies, which would further help in keeping the communication channels with the students, open. This would benefit the general "normal" students as well as the students with Learning Disabilities, in

the regular classroom setting. This specialized training, rather the understanding to deal with such students, is the missing part of the elusive, inclusive classroom. This training contained the identification, understanding and knowledge of the various types of Learning Disabilities. It also trained the teachers on how to deal with these students in a general classroom. The techniques and strategies to deal with these students were different from those for other students. Also, the Individualised Education Plan, commonly referred to, as the IEP, was taught to the teachers. Not essentially the creation of IEP, but rather, the way it works and the way it should be read, to most effective deliverance.

5.4 Title of the Research

Training Programme in Learning Disabilities for Teachers

5.5 Statement of Problem

- To design, develop and test the effectiveness of a teacher training programme in Dyslexia.

5.6 Objectives of the Research

1. To understand the identification of students with Dyslexia in general schools, and find out the status of teaching these students with Dyslexia in general schools.
2. To develop a training programme in Dyslexia, for teachers teaching in general schools.
3. To implement the training programme developed, on target teachers teaching in general schools.
4. To find the effectiveness of the training programme in Dyslexia, for teachers teaching in general schools.
5. To establish the usability of the developed product- Training Programme in Learning Disabilities (Dyslexia) for Teachers.

5.7 Variables of the Study

- **Independent Variable:** The Teacher Training Programme forms the independent variable of the research.
- **Dependent Variable:** Teachers' scores in the pre-test and post-test.
- **Extraneous Variables:** The following are the extraneous variables of the current research:
  - Locality of the school of the teacher (Urban / Rural)
  - Age of teacher
  - Qualification of teacher
  - Experience of teacher

5.8 Conceptual and Operational Definitions

5.8.1 Conceptual and Operational Definitions

5.8.1 Conceptual Definitions:

Training Programme

- Programs designed for training employees in specific skills .

  (https://www.entrepreneur.com/encyclopedia/training-programs)
- The systematic development of the knowledge, skills and attitudes required by an individual to perform adequately a given task or job". (Glossary of Training Terms, Manpower Commission, UK)

Learning Disability

- Learning Disabilities denotes a single but heterogenous group of disorders, manifested as significant difficulties in the use of basic academic skills like reading, reading-comprehension, writing, spelling, mathematics or language.

  (Dyslexia Decoded, by Bina Nangia)
- A learning disability is a neurological disorder. In simple terms, a learning disability results from a difference in the way a person's brain is "wired." (http://www.ldonline.org/ldbasics/whatisld)

Teacher

- A person who teaches, especially in a school.

  (https://en.oxforddictionaries.com/definition/teacher)

- A teacher (also called a school teacher or, in some contexts, an educator) is a person who helps others to acquire knowledge, competences or values.

  (https://en.wikipedia.org/wiki/Teacher)

Effectiveness

- An output of specific review/analyses (*e.g.*, the *WASC Educational Effectiveness Review* or its *Reports on Institutional Effectiveness*) that measure (the quality of) the achievement of a specific educational goal or the degree to which a higher education institution can be expected to achieve specific requirements.

  (Quality Assurance and Accreditation: A Glossary of Basic Terms and Definitions, UNESCO)

- Effectiveness can be defined as the extent to which goals are achieved and the degree to which expected issues are solved.

  (http://www.businessdictionary.com/definition/effectiveness.html)

5.8.2 Operational Definitions:

In this study, the following definitions were used and termed operationally from the perspective of the researcher:

Training Programme

It refers to the procedures designed to equip prospective teachers with the knowledge, attitudes, behaviours and skills they require to perform their tasks effectively in the classroom, school and wider community with regards to Learning Disabilities with a focus on Dyslexia and will aim at the following aspects:

i) Introduction to Learning Disabilities

ii) Differences between slow learners, learning difficulties and Learning Disabilities

iii) Preparation of checklists

iv) Use of standardised tests for identification and assessment of students having Learning Disabilities

v) Modification of teaching strategies

vi) Help and assistance to parents of students having Learning Disabilities

Learning Disabilities

This means a condition in which a child with normal intelligence but whose performance is not at the level of his Intellectual abilities. It focusses on Dyslexia, which is a neurogenetic deficit related to reading and spelling processes. It is a language difficulty. This disability includes varying stages of difficulty with the most commonly required abilities such as phonological understanding/awareness, general phonological decoding, mental processing speed, orthographic coding, short-term auditory memory, essential language versatility/verbal comprehension, and/or rapid naming.

Teacher

Teacher, as referred to in this research, is a person, trained with either a D.Ed, and or, B.Ed. degree, providing formal and ongoing instructional education in the English subject for pupils from Grade 1 to Grade 5, carried out at a place of formal education.

Effectiveness

This would mean a gain in the post-test scores based on the knowledge test in Learning Disabilities after the implementation of the training programme.

5.9 Hypothesis

5.9.1 Research Hypothesis (H_0): There will be an increase in the post test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools.

5.9.2 Null Hypothesis (H_1): There will be no significant difference in the post test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools.

5.10 Assumptions

1. It is assumed that the principals have honestly replied to the questionnaire.
2. The teachers are not trained to teach students with Learning Disabilities.
3. The teachers teaching in general schools use the same method to teach normal students and students with Learning Disabilities.
4. It is assumed that all the experimental subjects have accurately and honestly replied to the pre-test and post-test questions.
5. The teaching-learning process for children with Learning Disabilities in general classrooms can be improved through proper training of teachers.

5.11 Theoretical Base and Significance of the Study

Disability is a complex field and there is no single universally accepted, definition of disability. Not only do definitions differ across countries but these also differ and change within a country with evolving legal, political and social discourses. It is exceptionally cumbersome to find authentic data about the extent of spread of disability in India. Usually, the it is impossible to search for a single trend within the Indian educational infrastructure. The systems, trends and the population range makes a joke of estimates, and their varied origins. Since there are no checks and balances in the Indian system, no effort to collect and cross reference data, this makes things very difficult to estimate much with assurance about students with disabilities.

According to **IDEA (The Individuals with Disabilities Education Act, 2004)**, a Learning Disability is *"A disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language, which may appear as an impaired ability to listen, think, speak, read, write, spell, or do mathematical calculations."*

Dyslexia

Dyslexia is defined to be the ability to correctly read and write comprehension. This condition includes various degrees of difficulty with phonological knowledge, decoding phonologically, speed of mental processing, auditory short-term memory, language skills/verbal comprehension, orthographic coding, and/or rapid naming.

Developmental Aphasia

Aphasia refers to the loss of language after it has been developed. A student with aphasia at often times will have difficulty remembering the names of objects, will struggle to put words together into sentences, and will most probably struggle to read. Aphasia may develop as a result of a traumatic brain injury.

Dyscalculia

Dyscalculia is the learning difficulty associated to understanding or learning arithmetic, such as a marked difficulty in comprehending numbers, learning how to operate numbers, and understanding maths facts (Hallahan, 2016). Usually, it is perceived as a specific developmental learning disorder like dyslexia.

Dysgraphia

Dysgraphia depicts a incapability to write, primarily referring to writing skills, but also in terms of coherence (Bernstien, 2016). Agraphia is a complete loss of ability to write and spell when writing. Persons with agraphia can not transform graphemes in written language. Both occur regardless of the ability to read and is not due to intellectual impairment.

Dysorthographia

Dysorthographia is a condition that affects the ability to acquire spelling skills. Dysorthographics have problems with visual memory recall of words. People affected by it, exhibit an important and durable defect of assimilation of several grammatical rules which causes deterioration of the spontaneous writing or under dictation.

Dyslexia in Detail

The various types of Learning Disabilities are not mutually exclusive and any individual may have difficulties in more than one of the above areas. Dyslexia, for example, usually impairs all aspects of literacy development including reading, writing and spelling – and many dyslexic students also have difficulties with mathematics.

It is but natural that, every person affected with Dyslexia, would display a different set of symptoms, but there would always be one common feature amongst all dyslexics: it is difficulty to deal with the written language, which also signifies a major failure to recognise and interpret what is written. Symptoms of dyslexia are closely related to the various mental faculties such as Optical, Reading, Spelling, Audio, Speaking, Graphemes, Balance, Perception, Movement and memory (Krzyżak, 2016).

Usually, however, this learning disability is exhibited by facing problems with decoding a single word, which often reflects insufficient or bad phonological processing abilities. When we look at different symptoms of dyslexia, a major part of it is attributed to teachers. In a usual classroom, teachers can notice a lot of warning signs/symptoms among dyslexics, such as: changed shapes, reversed alphabets, inconsistent and incoherent spellings, incorrect sequences of letters and numbers, poor concentration as well as high distractibility while reading, skipping words or lines while reading, blurring of words, doubling of words and font-size change.

Apart from these, there are some speech sounds that dyslexics find difficult to distinguish from meaningful utterances, along with confessing from the right to the left, they find it hard to follow directions, difficulty in gauging distances, remembering basic instructions, managing legible handwriting. Amongst a multitude of problems, dyslexia stands at being one of the most common Learning Disabilities, coming to the forefront in the modern day classroom.

Inclusive Education, in essence, drastically differs from how it has been perceived of, as integration and mainstreaming of children with learning disabilities, which

was, more to be concerned mainly with learning disability/difficulty and ‘special educational needs’ and in turn implied that the students improving and becoming ‘fit enough’ or deserving of joining the mainstream. Then there are completely inclusive schools, such as Amar Jyoti school in Delhi, which is one of the few rare inclusive schools in India, no longer distinguish between "general classroom" and "special classroom" programs; instead, the school is organised so that all students learn together.

Furthermore, it is even more essential to know and understand that people learn differently. There exist, a lot of different theories on how subjects understand, which also serves an important role in knowing and perceiving what to teach whom. Following are a few theories and it is vital to understand their use to how do the students understand and also how one teaches in educational curriculum.

- **Sensory stimulation theory**

  Conventional sensory stimulation theories have their foundation in the fact that when all the senses are immersed and stimulated, effective learning takes place (Laird, 1985).

- **Reinforcement theory**

  It was believed that behaviour is a function of its consequences. The learner will repeat the desired behaviour if positive reinforcement follows the behaviour.

- **Cognitive-Gestalt Approaches**

  This theory stresses on the fact that every individual has a separate requirement and thought at different times, and that each person can have their own interpretations of different situations and subjects (Barrett, 2009).

- **Facilitation Theory**

  The foundation of this theory lies in the thought that learning will happen by the teacher being a facilitator of imparting education. This is achieved by creating an environment in which the learners are comforted enough to

consider new thoughts and do not feel threatened by any other factors (Alao, Kobiowu, Adebowale, 2010).

- **Action Learning**

Action Learning is the method adopted to connect the world of learning with the world of action via a reflective process, set within small cooperative learning groups referred to as 'action learning sets'.

The principles of learning, can be integrated into an implementable format by redesigning the teaching-learning process. Also, it is imperative to consider individual differences that exist among the students and to work towards including different set of activities that have variety and can interest all in educational programs.

It is said that in India, approximately 13 to 15 % out of general school going kids may be affected from some or the other learning difficulties. Unfortunately, the schools do not consider their difficulties, thereby not being sympathetic towards these children. This may also be a reason that these kids are presumed as failures within the general classroom. It adds to the difficulties of educators, when students with Learning Disabilities present themselves as normal students with sometimes average or even high IQ.

It is not intentional, but happens as disabilities and IQ are two disconnected potentials. This is also a major reason why they aren’t identified until a rather late stage. Even after identification nothing much is done since the teachers in regular schools have no knowledge about Learning Disabilities.

It has also been noticed in regular teacher training courses such as D.Ed, B.Ed, M.Ed courses along with schools claiming inclusive education as well as general schools, there is no emphasis on training in Learning Disabilities. The NCTE prescribed syllabus for D.Ed, B.Ed and M.Ed courses, lays special emphasises on varying levels on the understanding of disabilities, however in practice, it is being implemented by universities on a very basic level.

Usually, learning disabilities are suspected when there is a discrepancy between intelligence and achievement. Because many of the learning disabilities involve

reading and/or math, a student's class work and homework will be one of the best indicators of a learning disability.

This study has successfully developed a training programme in Learning Disabilities for Teachers, which has the following modules:

- Introduction to Learning Disabilities.
- Differences between slow learners, learning difficulties and Learning Disabilities.
- Preparation of checklists
- Use of standardised tests for identification and assessment of students having Learning Disabilities
- Modification of teaching strategies
- Help and assistance to parents of students having Learning Disabilities.

After this training, the teachers have had a better understanding of Learning Disabilities and have been able to carry out effective teaching for such students in a regular classroom.

This programme has equipped the teachers with enough knowledge to be able to identify, understand and aid the students with learning disabilities, to study and acquire knowledge in the usual classroom environ, without the need of a specialist educator to help the child. This further enables an infinitely better quality of life, education and employment for children with learning disabilities, facilitating a much better educated society.

The researcher had felt the need to design a training programme on learning disabilities for teachers so that it would be of help in identifying, assessing and remedying the quality of education being imparted by the teacher and absorbed by the student.

Further still, the programme designed has enabled the teachers to be better equipped to help and assist students and their parents to cope with the learning disabilities. When implemented to schools in general, this would help in early identification of students with learning disabilities and thus help in lowering the

drop-out of students due to their inability to cope with studies as a result of their disabilities, enabling a higher, better and superior educated number of students to pass out of institutions. This training in Learning Disabilities could be imparted to the teachers during their respective teachers training programmes and thus special training would not have to be organised for the same.

5.12 Review of Related Literature

The researcher took review of the following related literature in order to give direction to the research efforts and thought process:

Table 5.1 Review of Related Literature

Thesis and Dissertations		
Ph.D		
Topic	**Year**	**Author**
Competencies required for high school teachers to deal students with learning difficulties	2013	Vakkil. M
Inclusive Practices in Urban and Rural Schools in Pune: A Study	2013	Belapurkar. Anita Makarand
Experiencing School: An Exploratory, Multimethod Study of the Perceptions of Secondary Teachers, Advocating Parents and Mainstream Students with Learning Difficulties	2006	Watson. Julie
Curb cuts for writing: Students with learning disabilities' perceptions as learners and writers	2011	Schock. Robin Elizabeth
Programme based on brain-based learning for developing writing skills	2016	Morris. Dr. Aparna
Attitude, role performance and problems faced by teachers teaching children with special needs in inclusive schools	2011	Balasundaram. A
Overcoming exclusion through inclusive approach An experimental study	2014	Susmitha, P S
Impact of an intervention programme on the development of life skills among children with dyslexia	2011	Geeta
Effectiveness of inclusive education of Chhattisgarh An evaluative study	2005	Singh. Anita
The influence of teacher’s knowledge about learning disabilities on their feedback and emotional reactions	2012	Andabil. Azam Fattahi

Master's Degree		
A study on teaching competency of the teachers in schools for the mentally challenged	2008	Eben Julie and Sebastian
Dyslexia: An Investigation of Teacher Awareness in Mainstream High Schools	2013	Thompson. Sharon Lynette
Research Findings		
Rethinking professional issues towards inclusion	2011	Sujatha Malini, Dr. J
Knowledge of Specific Learning Disabilities among Teacher Educators in Puducherry, Union Territory in India	2013	Kamala. R, and E. Ramganesh
News Articles		
Every classroom has 2 or 3 children with Learning Disabilities - Times of India	2013	Malti Iyer
Textbook traumas for kids with Learning Disabilities-Times of India	2012	Shreya Bhandary
Plan to help kids with Learning Disabilities - Times of India	2011	Manash Pratim Gohain
10% of kids in India have learning disability: Experts - Times of India,	2012	
Dyslexia, autism awareness low among teachers - The Hindu	2014	Govind. D. Belgaumkar
Book Review		
A Parent's Guide to Special Education	Linda Wilmshurst, Alan W. Brue	
Children and Learning Difficulties	Onita Nakra	
Executive function 101	National Centre for Learning Disabilities	
Learning and Learning Difficulties: A Handbook for Teachers	Peter Westwood	
Dyslexia Decoded	Dr. Bina Nangia	
In Service Teacher Education: On Inclusive Education	SSA Manual	
Doing Research in Further Education and Training	Susan Wallace	
Understanding Dyslexia	Jill Hammond and Fabian Hercules	

The Evolution of Research on Dyslexia	Javier Gay´an Guardiola
Other Teacher Training Programmes	
Teacher Training Program (TTP)	Anjali Morris Foundation, Pune
FC-ECLD-Foundation Course on Education of Children with Learning Disabilities (FC-ECLD)	Rehabilitation Council of India (RCI) and Morris Foundation
Integrated B.Ed and M.Ed Special Education • Introduction to Neuro-Developmental Disabilities • Identification, Assessment and Needs of Children with Specific Learning Disability • Inclusive Education • Curriculum Development and Evaluation: SLD	Rehabilitation Council of India (RCI)
Sarva Siksha Abhiyan Teacher Training Program	Pune Municipal Corporation and Anjali Morris Foundation

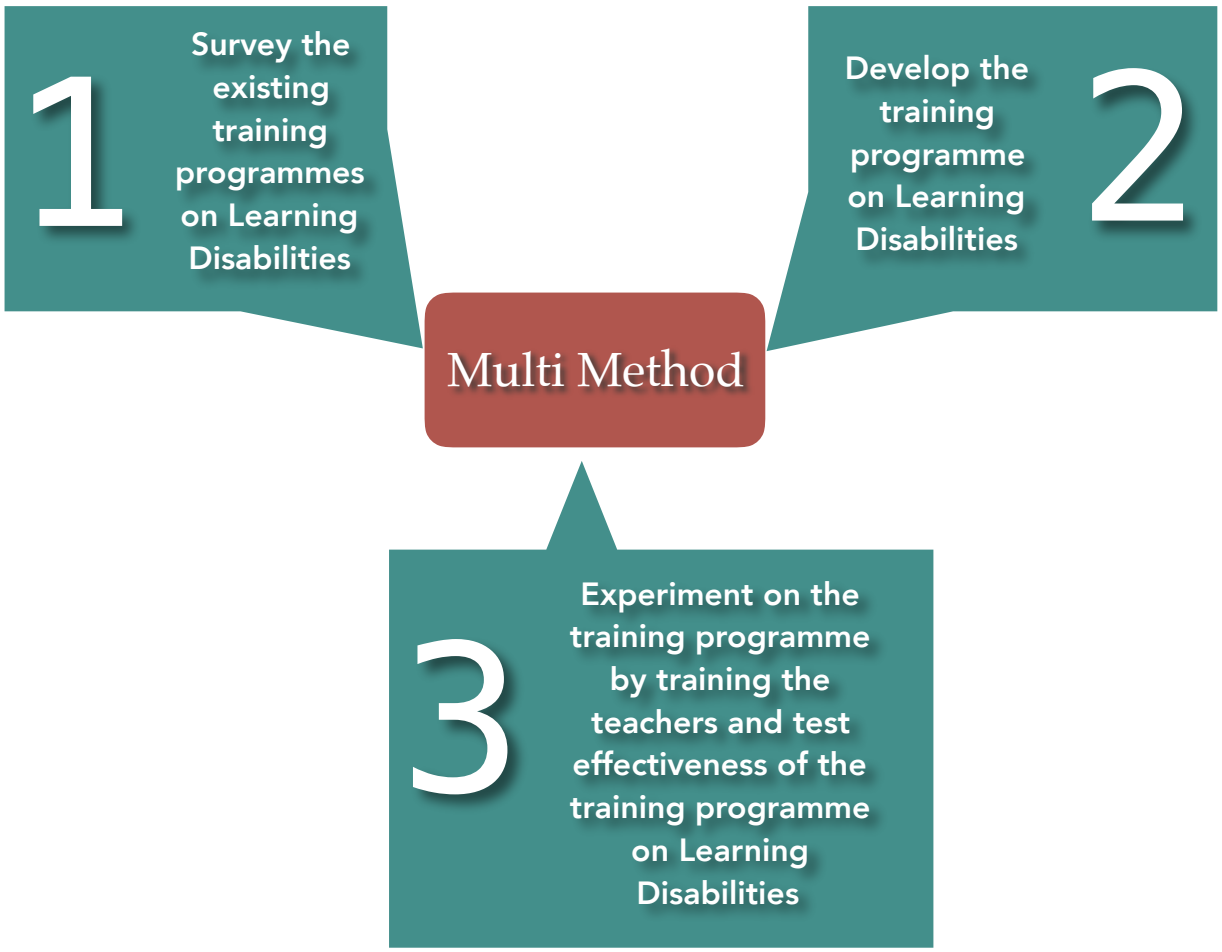
5.13 Type of Research

The purpose of the study can be defined as to develop a training programme and implement the same in order to improve the knowledge and skills of teachers in educating the students with Learning Disabilities. To ensure that the impact of training programme is favourable, the training programme was conducted on a sample of teachers as an experiment. The experimentative nature of the research implies that the research is an Applied Research.

5.14 Research Methodology

Mixed Method: It entails application of two or more sources of data or research method through investigation of question or two different but highly linked research questions. This can be illustrated as:

Figure 5.1 Research Methodology: Mixed Method



5.15 Population

1. The target population of the research was all school teachers in India.
2. For the study of Objective 1, the sampling population were the schools of Pune and Bilaspur. A sample of 18 schools were selected on random basis.
3. For the study of Objective 4, the sampling population were the English teaching teachers for standard 1 to 5 from the schools of Pune and Bilaspur. A sample of 28 teachers were selected on purposive basis.

5.16 Tools and Techniques of Research

1. For the purpose of Objectives 1, a survey was conducted on the principals of various schools. The principals were requested to fill up a questionnaire as a part of the survey. The replies to the questions in the questionnaire formed the basis on which conclusions were drawn.
2. For the Objective 2, the training programme was designed using the '9 Elements' described by the Kemp's Model of designing a training programme.
3. To attain Objective 3, implementing the training programme was done on a scheduled basis using different modules and powerpoint presentations
4. For Objective 4, various tools and techniques of inferential and descriptive statistical data analysis were applied to interpret the data gathered.
5. For Objective 5, a questionnaire was developed and administered, to test the usability of the program.

Table 5.2 Tools and Techniques of Research Objective 1

Research Method	Survey
Flow	Analyse of the number of schools that have children with Learning Disabilities
Data Collection Tool	Questionnaire
Data Analysis Tools	Percentage - Qualitative Test

Table 5.3 Tools and Techniques of Research Objective 2

Research Method	Product Development
Flow	Developing a Teacher Training Programme
Data Collection Tool	Research and Study
Data Analysis Tools	Standardised Test

Table 5.4 Tools and Techniques of Research Objective 3

Research Method	Application
Flow	Conducting the Teacher Training Programme
Data Collection Tool	Not Applicable
Data Analysis Tools	Not Applicable

Table 5.5 Tools and Techniques of Research Objective 4

Research Method	Experimental and concurrent
Flow	Determining the effectiveness of the Teacher Training Programme
Data Collection Tool	Standardised Test
Data Analysis Tools	Test of Normality, Mean, Standard Deviation, T-test, etc.

Objective 5

Research Method	Review of Experts
Flow	Recording responses and feedback form experts on the usability of the Teacher Training Programme
Data Collection Tool	Questionnaire
Data Analysis Tools	Percentage - Qualitative Test

5.17 Procedure of the Research

The procedure is illustrated as under:

Figure 5.2: Procedure of the Research

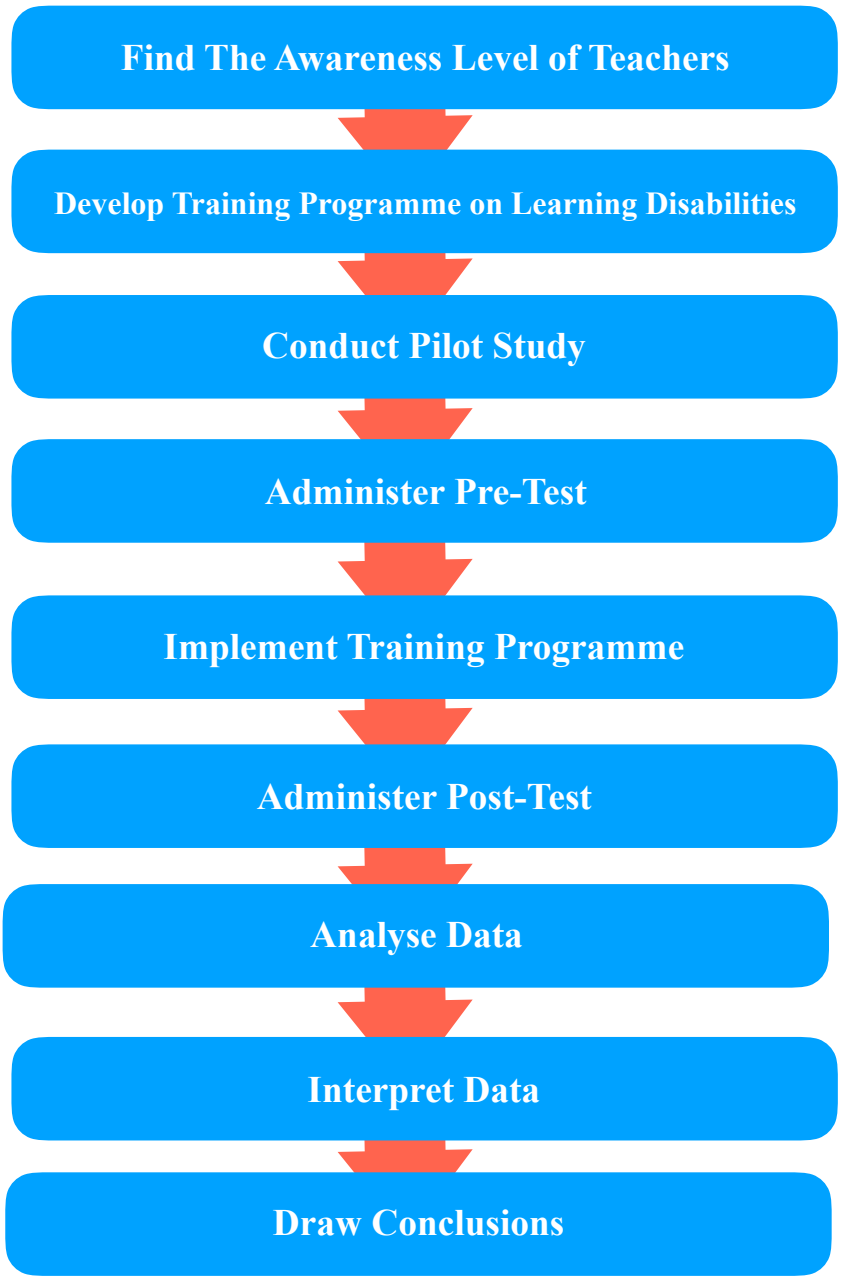


Table 5.7 Procedure of the Research

Objective	**Procedure of The Research**
1. To understand the identification of students with Dyslexia in general schools, and find out the status of teaching these students with Dyslexia in general schools.	**Method of Study:** Survey Method **Tools and Techniques:** Questionnaire **Procedure:** • The data gathered from the questionnaire was of qualitative type, which was transformed in quantitative type of data by allotting numerical values to the answers of the questionnaire. • The quantitative data was then analysed to make observations.
2. To develop a training programme in Dyslexia, for teachers teaching in general schools.	**Method of Study:** Designing a training programme **Tools and Techniques:** Kemp's Model for designing a training programme. **Procedure:** A training programme was designed to cover the topics of inclusive education, Learning Disabilities and knowledge and skills required to educate students with Learning Disabilities.

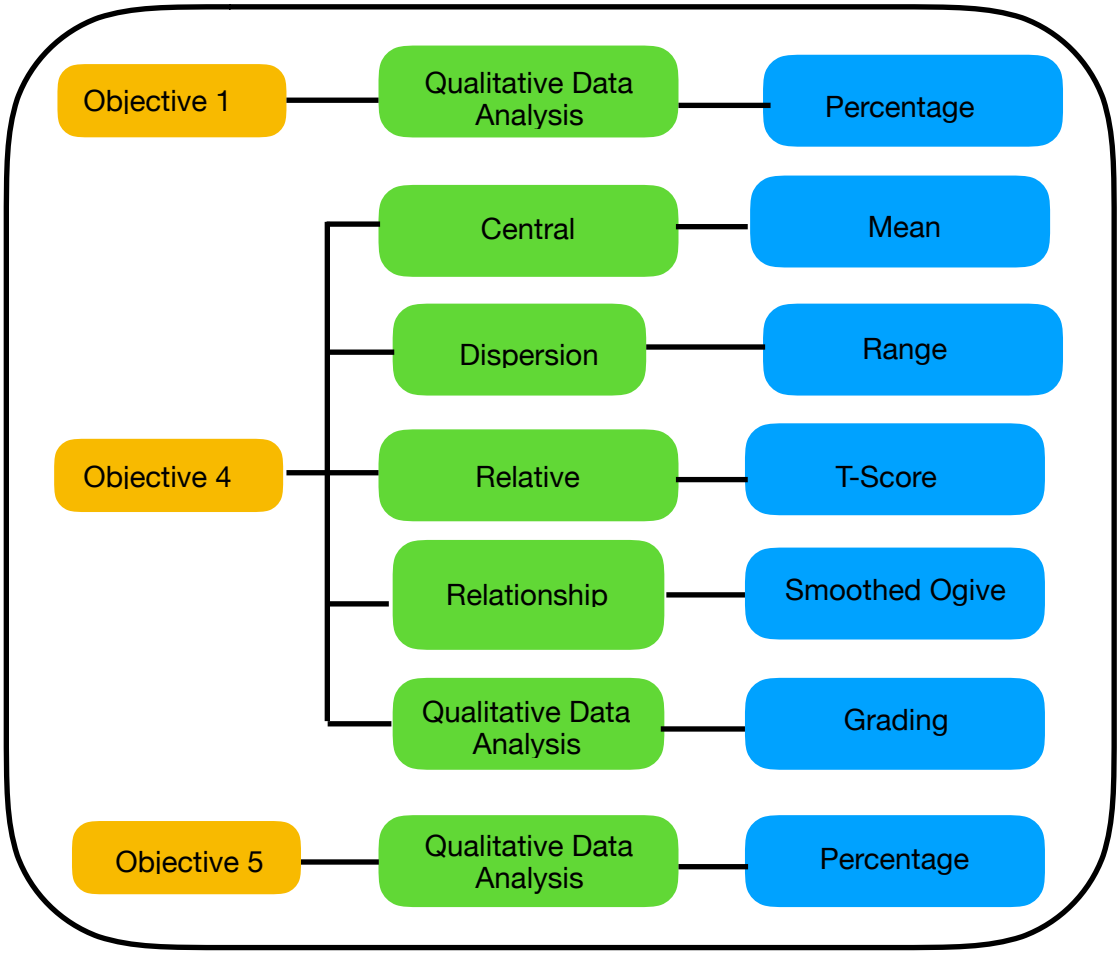
Objective	**Procedure of The Research**
3. To implement the training programme developed, on target teachers teaching in general schools.	**Method of study:** Conducting the Teacher Training Programme **Tools and Techniques:** • Modules • Powerpoint Presentation • Activities **Procedure:** Teachers of 3 schools were trained using modules divided into sessions. Different activities were performed to give the teachers an idea of how Learning Disabled (Dyslexic) students perceive education in day to day life. Powerpoint presentations along with handouts were used as an additional tool to enhance the training to the teachers.
4. To find the effectiveness of the training programme in Dyslexia, for teachers teaching in general schools.	**Method of Study:** Pre-test — Training — Post-test **Tools and Techniques:** • Inferential and Differential Statistics were applied to the quantitative data accumulated from the pre-test and post-test. • Measures of Central tendency, Dispersion, Relative Position and Relationship, skill assessment **Procedure:** The scores of teachers at pre-test and post-test are compared in order to understand the impact the training programme on the performance of teachers. Also the practical skills of the teachers were graded and analysed

Objective	Procedure of The Research
5. To establish the usability of the developed product- Training Programme in Learning Disabilities (Dyslexia) for Teachers.	**Method of Study:** The teacher training programme was given to an expert for review and suggestions. The responses were tabulated. **Tools and Techniques:** The qualitative response of the expert was converted into quantitative data and then analysed **Procedure:** The quantitative responses in percentage form of the different sections of the questionnaire were aggregated and an arithmetic mean of each section was computed. The percentile of the aggregated means of each section was used to deduce the usability of the Teacher Training Programme

5.18 Data Analysis Techniques used for observation and to deduce conclusions

The techniques of data analysis used for observation and to derive conclusion are as stated:

Figure 5.3 Data Analysis Techniques used for observation



5.19 Findings of the research for Objectives 1

With the help of the questionnaire it was found that out of 18 schools of the sample, 13 principals acknowledge that their schools, i.e. 72% of the schools have children with Learning Disabilities . 61% of the schools (11 schools) also employ special faculty for students with Learning Disabilities in their schools.Hence it can be said that the results of the survey carried out indicate that a there exists a high number of schools that have children with Learning Disabilities. The principals of the schools were of the opinion that trained teachers are required for educating children with Learning Disabilities.

5.20 Findings of the research for Objectives 2 and 3

Objective 2 was to develop a teacher training programme and Objective 3 was to implement the developed Teacher Training Programme. Hence research findings were not applicable for these objectives.

5.21 Findings of the research for Objective 4

With-holding the underlying idea of comparing the performance of teachers at pre-test and post-test, statistical tools were applied to the data collected in the form of scores. At first the mean of the scores at pre-test and post-test was computed to understand the impact of training programme on the performance of teachers. The mean at post-test was higher than that in pre-test for Multiple Choice Questions as well as True or False statements which indicates that the training programme favourably affected the knowledge of teachers.

The significance between the mean was computed to prove that the favourable difference of the mean at post-test from the mean at pre-test was real and not a consequence of chance factors or sampling fluctuations. The t-ratio computed exceeded the critical value of **t** which means that the null hypothesis H_0 was rejected which inter alia means that the research hypothesis H_1 holds true. The significance was tested with 0.1 level of confidence, i.e. the research hypothesis is confirmed with 99% surety.

The range of score at pre test was much lower than the rage of scores at post-test which can be clearly noticed in the graph plotted for the scores of each teacher.

T -Score was computed with the help for graph plotted on a T-Scale which shows that there was an intra individual improvement in the performance of each teacher.

Grade were awarded to the teachers on the basis of their performance in the practical assignments of the training programme which shows that the training programme helped to develop practical skills to apply the knowledge gained in the training programme.

5.22 Findings of the research for Objective 5

The Teacher Training Programme was put under test of usability by taking and recording feedback and responses of different teachers. These responses were recorded and a qualitative- percentage test concludes that the Teacher Training Programme is usable and will produce profitable results.

5.4: Findings of the Research

Objective 1	The numbers of schools that have students with Learning Disabilities are high and schools need teachers with proper training in order implement inclusive education. A very few schools have faculties that have experience in teaching children with Learning Disabilities.
Objective 2	Not Applicable
Objective 3	Not Applicable
Objective 4	• Null hypothesis H_0 is rejected and hence the research hypothesis H_1 holds true. There is an increase in the Post Test scores on the knowledge test in Learning Disabilities after the implementation of the training programme in Learning Disabilities for teachers teaching in general schools. • The results obtained indicate that the program of imparting knowledge to teachers was successful. • The teaching program carried on by the researcher has intra-individually enhanced the ability and knowledge of the teacher. There is an intra-individual improvement in the performance of the teachers. • The training program was favourably effective on the intra-individual performance of the teachers. • The training program also helps the teachers to develop the skill for practical applying the ways and methods discussed in the teacher training program.
Objective 5	The Teacher Training Programme is helpful and proficient.

5.23 Recommendations

The Teacher Training Programme in Learning Disabilities for teachers can be extended to teachers teaching various subjects to help them to deal with children facing Learning Disabilities (Dyslexia).

This training programme can be implemented for training trainee teacher pupils as a part of the B.Ed or any other educational course so as to increase their understanding regarding Learning Disabilities.

With a better understanding of the Learning Disabilities and Individualied Educational Plan and strategies to cope with Learning Disabilities, the teachers can implement the same in general classroom setting.

This training can be extended to secondary and higher classes teachers so as to help teachers to be able to deal with Learning Disabilities in their classrooms.

5.24 Discussion: How is this training programme different from others in the field of education?

The researcher reviewed, read, attended and compared the training programme developed, against the other training programmes/syllabi prevalent in the education sector. The following points of similarity and uniqueness were brought to light:

5.24.1 Similar Features:

- Programme made for trainee teachers and in-service teachers.
- Curriculum is inline with the guidelines laid down by the Sarva Shiksha Abhiyaan, 2001.
- The curriculum/syllabi is mostly designed for trainees, to attend it for at least 40 hours.
- The syllabi contain general awareness, introduction, features of common learning disabilities.

5.24.2 Unique Features:

The purpose of this training programme, is to equip the general classroom teacher to deal with students having different levels of learning disabilities, combined with various co-morbidities. The trainees are trained to read an IEP and implement the strategies enlisted in it. This training programme is a comprehensive effort to bring up the teaching-learning experience of children with learning disabilities, at par with the rest of the class, thereby providing for a holistic, truly inclusive classroom environment. This training programme can be a part of any on going training programme and enable regular teacher gain competency to teach with children with learning disabilities as against going through a special education Bachelors or Masters Degree.

5.25 Suggestions for further research:

- Research needs to be implemented on implementation of practical aspects of this training programme in day to day teaching thus enabling to understand the long term effectiveness of the training programme
- Another line of research that may be approached is similar training programmes in other types of Learning Disabilities namely dyscalculia, dysgraphia etc.
- Research may also be conducted to explore the implementation of such training programme to teachers teaching other subjects as well.
- Also another topic of research could be a training programme in Learning Disabilities for teachers teaching secondary sections in schools.
- Research can also be done on developing a training programme on similar lines in various other languages

5.26 Contributions to the Knowledge in the field

- Self learning and reference material prepared for this research programme will be definitely used as a basis in implementation of strategies to help children with Learning Disabilities in classrooms. It will be a guide to teachers, about

Learning Disabilities, especially with regards to developing a structured teacher training programme in Learning Disabilities.

- This programme has covered all aspects of inclusion as well as Learning Disabilities thereby providing the teachers with all the necessary tools and techniques to identify, informally assess and thereafter request for referral of a child who maybe at risk of Learning Disabilities. This programme further provides the teachers a strong basis to make necessary changes in her classroom to enhance learning for a student with Learning Disabilities. Although teachers are neither authorised nor equipped to make Individualised Educational Plans, this training programme has guided and trained teachers in making an IEP so as to have a better understanding of the same when they are presented with one for a child who is diagnosed with a learning disability.

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